Encyclopedia of
VOCATIONAL GUIDANCE

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15 EAST 40TH STREET, NEW YORK, N. Y.

PRINTED IN THE UNITED STATES OF AMERICA

PREFACE

This book is encyclopedic only in a relative sense; it does not pretend to cover in great detail all phases of the guidance field. The topics included were chosen from a master list and many important subjects were omitted because of lack of space. The Encyclopedia of Vocational Guidance is designed primarily for professional counselors who do not have large library resources. Although many of the articles presuppose a considerable background in the subjects fundamental to guidance, a good deal of material has been added for the benefit of those who are new to the profession.

So wide is the scope of vocational guidance that expertness in it requires preparation in the fields of education, psychology, economics, general medicine, rehabilitation, psychiatry, statistics, and a dozen other disciplines. One of the objectives of this volume is to draw attention to the wide range of this new applied science.

Economic aspects of vocational choice are extremely important. Some attention has been given to this phase of guidance in the articles on occupational trends, unemployment, cost of preparation for the major professions, use of census data, and average earnings. These articles present only a very brief introduction to this extremely important factor in effective counseling. Only advisers who are fully informed regarding the financial and employment outlook for various jobs are entitled to give counsel to others. The inability of even the most competent authorities to foresee clearly the economic conditions that will exist two or three decades hence is one of the most serious weaknesses in the guidance process. This, of course, is more true of some fields than of others.

No attempt has been made in this book to present information on the training requirements, economic outlook, or general nature of individual occupations. This type of material has been very adequately covered in other sources, some of which are referred to in this Encyclopedia.

Many important occupations are not represented in the series of aptitude articles, in most cases because of the absence of scientific data dealing with personnel selection. In a few instances, articles by outstanding men and women in important fields were included, even though careful investigations on aptitude were lacking. This is justified on the ground that these articles present hypotheses deserving of further study and research.

An effort has been made to describe succinctly the guidance activities of the principal countries of the world. There are, of course, still many nations which have done nothing or next to nothing in this area of endeavor. War and the aftermath of war made it impossible for the editor to obtain up-to-date information on several countries known to have carried on organized guidance work prior to the last conflict. Accordingly, he assembled brief articles based on published pre-war sources. A number of contributions were obtained through the cooperation of Washington embassies (Greece, the Netherlands, Portugal, Switzerland, Poland, Australia and New Zealand). It is likely that there will be important changes during the next decade in guidance patterns throughout the world, particularly on the continent of Europe, but it is too early to discern clearly what these future developments will be.

The editor wishes to emphasize that many tests are described in this volume which he would hesitate to employ in his own work; inclusion of tests in this book does not constitute endorsement of them. Although there is considerable difference of opinion among authorities on the validity and usefulness of some of the tests, some that are being seriously questioned are among the most widely employed. The primary purpose of the test articles has been that of description, although critical evaluations also appear with regard to the principal categories. The discriminating reader is referred to the Mental Measurements Yearbooks edited by O. K. Buros. The extensive literature on tests can also be traced through the Occupational Index, Psychological Abstracts, the Hildreth Bibliography of Mental Tests and Rating Scales (1939 Revision and 1945 Supplement), and through other reference sources.

It was impossible, of course, to include even brief articles on all tests useful in guidance. However, it is hoped that most of the more generally known ones have been described. Originally, it was intended to include the prices of all tests, but this was not done at the request of several publishers who anticipated increases in the cost of materials.

The editor early recognized that it would be impossible to deal with all of the countless facets of vocational counseling in a book of this size and he has sought to compile a volume representative of present achievement in the principal branches of guidance work. It will be patent to the critical reader that advances in this field have not been uniform and that there are many important areas where little or no progress is evident. It is hoped that the exposure of these gaps in our knowledge will inspire attempts to bridge them on the part of guidance engineers.

It would require much space to enumerate all the people who by their advice and in other ways have helped to make this Encyclopedia possible. The invaluable assistance given by Mrs. Ina Pearson and her staff of librarians at the University of Idaho, Southern Branch, and the stenographic help provided by Mrs. Kathleen F. Isaac of the same institution, cannot go without note and appreciative mention. The editor wishes to state his great debt to his wife whose wise counsel enabled him to weather a number of problems which arose in the organization of this book. Above all, he is extremely grateful to the hundreds of men and women whose contributions make up this Encyclopedia. He dedicates it to the future of vocational guidance, whose beginnings these pages seek to record.

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June 25, 1946

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[A.I.G.] Arthur I. Gates
[F.J.G.] Frederic J. Gaudet
[C.G.G.] Curtis G. Gentry
[C.d'A.G.] C. d'A. Gerken
[E.E.G.] Edwin E. Ghiselli
[G.I.G.] G. I. Giardini
[J.G.G.] Jeanne G. Gilbert
[A.R.G.] A. R. Gilliland
[R.G.] Ruth Grant
[W.J.G.] Walter J. Greenleaf
[J.P.G.] J. P. Guilford
[J.J.O.G.] J. J. Oliveira Guimaraes
[J.M.H.] John M. Hadley
[M.E.H.] Milton E. Hahn
[W.M.H.] Walter M. Hall
[T.J.H.] Thomas J. Hand
[L.H.H.] Leigh H. Harden
[E.F.H.] Eldred F. Hardtke
[L.R.H.] Lindsey R. Harmon

[J.D.H.] J. Donald Harris
[M.H.] Molly Harrower
[J.I.H.] Jacob I. Hartstein
[S.R.H.] Starke R. Hathaway
[W.H.] Winifred Hausam
[S.S.H.] Sara Stinchfield Hawk
[N.H.] Nancy Hay
[S.P.H.] Samuel P. Hayes
[H.W.H.] Harry W. Hepner
[H.D.H.] H. D. Hicker
[M.E.H.] M. Eunice Hilton
[A.F.H.] A. F. Hinrichs
[M.S.H.] Marshall S. Hiskey
[H.B.H.] Helen B. Holodnak
[R.H.] Robert Hoppock
[C.A.H.] Charles A. Horn
[H.W.H.] Harlan W. Horner
[A.M.H.] Anita M. Hostetter
[H.H.] Holland Hudson
[J.M.H.] John M. Hughes
[D.G.H.] Doncaster G. Humm
[T.H.] Thelma Hunt
[E.H.] Elizabeth Hussey
[E.A.H.] Ernest A. Hutchinson
[H.A.J.] Harry A. Jager
[M.B.J.] Milton B. Jensen
[E.C.J.] Elizabeth C. Johannaber
[R.B.J.] Richard B. Johnson
[R.H.J.] Roswell H. Johnson
[W.F.J.] Walter F. Johnson
[S.M.J.] S. M. Justice
[O.J.K.] Oscar J. Kaplan
[R.Z.K.] Rose Zankan Kaplan
[H.W.K.] Harry W. Karn
[F.J.K.] Franklin J. Keller
[E.C.K.] Earl C. Kelley
[V.H.K.] Victor H. Kelley
[T.L.K.] Truman L. Kelley
[E.L.K.] E. Lowell Kelly
[J.W.K.] J. W. Kelly
[N.C.K.] N. C. Kephart
[B.K.] Bruno Klopfer
[R.C.K.] R. C. Klussendorf
[R.W.K.] Ruth W. Kohlmetz
[S.C.K.] Samuel C. Kohs
[M.D.K.] Max D. Kossoris
[W.C.K.] W. C. Krathwohl
[G.F.K.] G. Frederic Kuder
[J.K.] Jacob Kwalwasser
[W.S.L.] William S. Larson
[P.S.L.] Philip S. Lawrence
[C.H.L.] C. H. Lawshe
[S.R.L.] Stephen R. Laycock
[W.G.L.] William G. Lennox
[E.A.L.] Eugenie A. Leonard
[J.P.L.] J. Paul Leonard
[H.L.] Harry Levinson
[H.S.L.] Herbert S. Lewin
[S.L.] Sidney Lewine
[H.D.L.] Harvey D. Lewis
[A.M.L.] Alvina M. Lindegren
[H.C.L.] Henry C. Link
[J.J.L.] John J. Loftus
[H.H.L.] H. H. London
[P.L.] Philip Lovejoy
[D.F.M.] Donald F. McCall
[D.C.M.] David C. McClelland
[H.B.M.] H. B. McDaniel
[E.C.M.] Evelyn C. McKay
[J.L.M.] James L. MacKay
[R.L.M.] R. Louise McManus
[W.J.M.] Walter J. McNamara
[Q.M.] Quinn McNemar
[W.F.M.] William F. Madden
[B.E.M.] Benjamin E. Mallary
[B.J.M.] Betty J. Mangold
[K.M.] Kim Margolis
[S.S.M.] Stanley S. Marzolf
[A.H.M.] A. H. Maslow
[C.O.M.] Chester O. Mathews
[M.M.^{1}] Margaret Mead
[M.M.^{2}] Max Meenes
[N.C.M.] Norman C. Meier
[C.M.] Christine Melcher
[P.L.M.] P. L. Mellenbruch
[F.S.M.] Frieda S. Miller
[W.S.M.] W. S. Miller
[T.M.] Thelma Mills
[C.I.M.] Charles I. Mosier
[F.A.M.] Frances A. Mullen
[C.E.M.] Charles Everett Myers
[C.S.M.] Charles S. Myers
[A.G.N.] A. Gordon Nelson
[J.O.N.] John Oliver Nelson
[R.M.O.] Ruth Mayer O'Neal
[A.E.O.] Agnes E. Osborne
[A.S.O.] Arthur S. Otis
[H.E.P.] Howard E. Page
[I.P.] Irving Pichel
[L.G.P.] Lillian G. Portenier
[T.L.P.] T. Luther Purdom
[H.H.R.] H. H. Remmers
[H.D.R.] H. D. Richardson
[L.H.R.] LaVange H. Richardson

[J.R.R.] John R. Roberts
[L.S.R.] Lawrence S. Rogers
[W.T.R.] Walter T. Rolfe
[D.G.R.] David G. Ryans
[M.A.S.] Milton A. Saffir
[D.E.S.] Daniel E. Safier
[J.S.] Joseph Samler
[H.S.^{1}] Herbert Sanderson
[M.S.] Martin Scheerer
[S.J.S.] Sarah June Schick
[H.E.S.] H. E. Schrammel
[I.D.S.] Ira D. Scott
[C.E.S.] Carl E. Seashore
[H.S.^{2}] Harold Seashore
[D.S.^{1}] David Segel
[E.W.S.] Earl W. Seibert
[S.B.S.] Saul B. Sells
[E.V.S.] Elvin V. Semrad
[D.S.^{2}] David Shakow
[C.L.S.] Carroll L. Shartle
[W.F.S.] Walter F. Shaw
[M.J.S.] Michael J. Shortley
[M.M.S.] Margaret McAdory Siceloff
[C.M.S.] Charles M. Smith
[H.L.S.] H. L. Smith
[G.S.S.] George S. Speer
[H.J.S.] Herbert J. Stack
[H.C.S.] Harry C. Steinmetz
[C.D.S.] Charles D. Stewart
[F.R.S.] Frank R. Stilwell
[K.B.S.] Kenneth B. Stoddard
[M.R.S.] Marion R. Stoll
[L.H.S.] Leland H. Stott
[E.M.S.] Edgar M. Stover
[E.K.S.] Edward K. Strong, Jr.
[D.E.S.] Donald E. Super
[L.M.T.] Lewis M. Terman
[M.N.T.] M. N. Thisted
[C.W.T.] C. W. Thomasson
[L.P.T.] Louis P. Thorpe
[L.L.T.] L. L Thurstone
[E.W.T.] Ernest W. Tiegs
[L.J.T.] Leslie J. Tompkins
[H.A.T.] Herbert A. Toops
[M.R.T.] M. R. Trabue
[A.E.T.] Arthur E. Traxler
[F.T.] Frances Triggs
[C.S.T.] Chauncey S. Truax
[J.T.] Jacob Tuckman
[W.W.T.] William W. Turnbull
[A.M.T.] A. M. Turrell
[P.L.T.] Paul L. Turse
[M.J.V.W.] M. J. Van Wagenen
[K.E.V.] Konstantinos E. Vassilakis
[K.W.V.] K. W. Vaughn
[H.v.d.V.] H. van der Vlist
[B.C.W.] Blandena C. Wadell
[M.T.W.] Mary T. Waggaman
[C.E.W.] Carlos E. Ward
[N.D.W.] Neil D. Warren
[R.I.W.] Robert I. Watson
[D.W.] David Wechsler
[B.M.W.] Bertha M. Weeks
[E.W.] Ellis Weitzman
[R.E.W.] Ralph Emerson Weston
[E.C.W.] Esther C. Whitman
[D.N.W.] Daniel N. Wiener
[F.B.W.] Francis B. Wilby
[M.H.W.] Matthew H. Wilson
[S.E.W.] S. Edgar Wirt
[H.H.W.] Helen Hutchins Wolfe
[E.F.W.] E. F. Wonderlic
[K.S.W.] Kenneth S. Wood
[E.W.^{2}] Esther Woodburn
[C.W.] Catharine Worthingham
[C.G.W.] C. Gilbert Wrenn
[J.W.W.] J. Wayne Wrightstone
[J.R.Y.] John R. Yale
[M.W.Z.] Marguerite W. Zapoleon
[B.Z.] Bohdan Zawadzki
[F.R.Z.] Franklin R. Zeran
[W.A.Z.] W. A. Ziegler
[G.F.Z.] Gertrude Folks Zimand

A

ACCOUNTANCY, APTITUDE FOR. The American Institute of Accountants is sponsoring a project dealing with techniques for the selection of personnel for public accounting. The project is being directed by Dr. Arthur E. Traxler and Dr. Ben D. Wood. Accounting aptitude and achievement tests are being prepared and given experimentally and it is hoped that a large amount of reliable and valid data will be accumulated.

O. J. K.

ACHIEVEMENT TESTS, GENERAL

Iowa Tests of Educational Development. The testing program based on the Iowa Tests of Educational Development is the product of more than fifteen years of experience and research under the direction of Dr. E. F. Lindquist at the State University of Iowa. The program has two major purposes: first, to enable teachers, administrators and counselors to keep themselves more intimately and reliably acquainted with the continuing educational development of each individual pupil, in order that instruction and guidance may be better adapted to his own changing interests, needs, and abilities; and second, to provide the school administrator with a more dependable and objective basis for the over-all evaluation of the total educational offering of the school, in order that any need for curriculum revision may be brought to his attention, and that his supervisory efforts may be more wisely distributed.

The battery consists of a series of general background tests—Understanding of Basic Social Concepts, Background in the Natural Sciences, Correctness in Writing, and Ability to Do Quantitative Thinking; a corresponding series of reading tests—Ability to Interpret Reading Materials in the Social Studies, Ability to Interpret Reading Materials in the Natural Sciences, and Ability to Interpret Literary Materials; a General Vocabulary test to supplement the others in providing a measure of general scholastic aptitude; and a Use of Sources of Information test measuring familiarity with and ability to use periodicals and reference materials.

These tests are intended for grades nine to thirteen. Two equivalent forms, X-1 and Y-1 are available and can be used in alternate years so that no pupil takes the same set of questions two years in succession. A minimum of three half days is required for administering the tests. Percentile norms, based on a sample of over 50,000 students in 290 schools, have been established for each grade.

Institutions participating in this comprehensive testing program are furnished all necessary testing materials, including a 52-page test booklet containing the nine tests, a separate answer sheet for each pupil, and detailed examiners' manuals. Other pamphlets discuss the nature and purposes of the Iowa Tests of Educational Development, how the teachers can use the test results, and how the school administrator can follow up the test results.

A special feature of the program is the central scoring and reporting service which minimizes the school's clerical burden. Multiple sets of pupil profile cards are provided, making it possible for each teacher to have a set of profile cards for the pupils in his classes. A Confidential Summary Report, sent in duplicate to the school administrator, shows grade for grade how the school's average scores on individual tests compare with those of schools throughout the country.

A prospectus giving detailed information on the program and on the manner in which it is conducted is available to school administrators on request. The publisher is Science Research Associates, 228 South Wabash Avenue, Chicago 4, Illinois.

B. J. M.

Myers-Ruch High School Progress Test. The authors, Charles Everett Myers, Giles M. Ruch, and Graham C. Loofbaurow, prepared this test as a quick reliable survey-type measure of high school progress in the general field of basic academic learning. There are 120 items in the test: 30 each on English, social studies, mathematics and science. Each item was selected and accurately placed for difficulty after extensive use so that the items in each section of the test form a scale of approximately equal steps. Two forms have been published but four forms were prepared together and are available on adequate demand. The test is adapted to either hand scoring by stencil or on the International Business Machine Corporation scoring machine. The time limit of 60 minutes is ample as students usually do all they can on the test in about 50 minutes.

The test is reliable as a general measure of advancement in the fields of learning covered. It is a quick and economical means of comparing classes, schools, and school systems. For individual guidance, it directs the student and his counselor to promising fields for detailed exploration.

Though this test was built as a unit and not intended to give highly reliable scores on each of its four sections separately, the section scores do have significant diagnostic and guidance values. For example, a student could fail to make any score whatever on one or two sections or make very low scores on even three sections and yet make so good a score on one section that he secures an above average score on the test as a whole.

As a basis for admitting students to college, this test has been highly satisfactory and has served this purpose successfully for many years in both MSS. and published form.

The test has also been used with the Otis Quick Scoring Test of Mental Ability, Gamma, in several specific editions such as the Virginia Edition of Myers-Ruch-Otis Classification Test. Standard scores have been developed for these two tests with a mean score of 50 and a standard deviation of ten points.

Published by the World Book Company, Yonkers, New York.

C. E. M.

Progressive Achievement Tests. The Progressive Achievement Tests, devised by Ernest W. Tiegs and Willis W. Clark are designed to measure the individual's status in the basic skills or tools of learning. The results of these tests correlate higher with success in school subjects than do the results of intelligence tests. The data are of value in guidance, selection, and placement in occupations where competence in reading, arithmetic, and written expression are of consequence. However, their primary function is the identification of abilities and disabilities in the learning skills, and the presentation of the results in such form that they may be easily interpreted and effectively used in guiding pupil activities.

This achievement test series consists of four batteries extending from the primary grades through the Junior College level. Each battery has been standardized with respect to other batteries; directly comparable scores are thus obtained through this whole range of measurement. Each battery contains five major tests—Reading Vocabulary, Reading Comprehension, Arithmetic Reasoning, Arithmetic Fundamentals, and Language. Each of these five is further divided into diagnostic sub-tests.

The first page of every test consists of a *Profile* on which pupil abilities and disabilities in the five major and nineteen to twenty-one minor areas are shown graphically. This profile is so devised that it is, in effect, a table of norms in graphic form. The teacher needs only to check the scores on this profile in order to obtain the individual's grade placement in each of the abilities tested; each checked score is then compared with the grade placement scale at the top or bottom of the profile, and the grade placement is indicated without any arithmetical or other computation. The new edition of the Progressive Achievement Tests also provides percentile norms; thus two different means of comparison are provided.

One of the outstanding features of every test in this series is the *Diagnostic Analysis of Learning Difficulties.* The numbering and lettering system of this Diagnostic Analysis is identical with that of the test; the teacher checks the errors made in the test on the Analysis blank; and the information opposite each check indicates the type of error made. The teacher then has an easily interpreted diagnostic analysis of pupil learning difficulties which may serve as the basis for constructive educational activities. By tearing this Diagnostic Analysis from the test booklet and keeping it on her desk, the teacher saves the heavy burden of clerical work usually involved in individualizing pupil guidance.

The standardization of the Progressive Achievement Tests has been based on more than 50,000 cases at each level. The establishment of norms has involved both intensive and extensive analysis of reading, arithmetic, and language test data in relation to other tests, to intelligence measures, and to the age-grade classification of pupils. The basic information has been secured from numerous school districts in twenty states, and includes data from a total of approximately one-half million pupils.

The age-grade norms permit a comparison of a given individual's score with the average (median) score made by pupils in the typical school population. The age-grade relationships shown are real, rather than hypothetical, and hence agree with those existing in most school districts which have a large and normal distribution of pupil population.

Also, the Progressive Achievement Tests provide percentile norms which enable a comparison to be made of a given pupil's response with the variation which normally occurs in each grade.

The Progressive Achievement Tests possess a high degree of reliability. Reliability coefficients vary from .96 for the Primary Battery to .98 for the Advanced Battery. Reliability coefficients for single grade ranges of the five major sections of the test vary from .84 to .96 and average above .90.

The *validity* of these batteries is also high. The essential elements of the tools of learning are relatively easy to identify. Test items were selected from materials representing the educational objectives and curricula of the more progressive educational systems. Correlations with school success reveal their superiority over intelligence tests in predicting future learning success.

These tests are easy to *administer* and to score. The Manual contains simple instructions which may be used by any teacher with assurance that valid results will be obtained.

There are *three forms* of the Progressive Achievement Tests in the Primary, Elementary, and Intermediate Batteries, A, B, and C. The Advanced Battery is published in two forms, A and B. The Reading, Arithmetic, and Language sections may also be obtained as separate tests for all eleven forms of the four batteries.

In addition to the hand scoring editions, the separate reading, arithmetic, and language tests of this series are available in machine-scoring editions.

The publisher of all batteries and forms of the Progressive Achievement Tests is the California Test Bureau, Los Angeles 28, California.

E. W. T.

Stanford Achievement Test. The original forms of the Stanford Achievement test were prepared by Truman L. Kelley, Lewis M. Terman, and Giles M. Ruch, in 1922. The present forms D, E, F, G, and H constitute the third revision of the test and for this Giles M. Ruch was mainly responsible. This revision involved a complete resurvey and examination of the elementary school curriculum.

There are three different complete batteries of tests for grades 2–9, each covering in one test booklet the separate subjects of the grades for which it is intended. There are two different partial batteries, for grades 4–9 covering the core subjects only, in a shorter and more economical test booklet. The Primary Battery is designed for grades 2 and 3, the Intermediate Battery for grades 4–6, and the Advanced Battery for grades 7–9.

Advanced Battery: The ten tests in the Advanced Battery are as follows: Paragraph Meaning, Word Meaning, Language Usage, Arithmetic Reasoning, Arithmetic Computation, Literature, Social Studies I (history primarily), Social Studies II (geography primarily), Elementary Science, and Spelling.

For ease in interpreting scores, the raw scores for each subtest are converted to equated scores by means of tables appearing at the foot of each subtest. Direct comparisons may be made in the terms of these equated scores from one subtest or battery to another. The equated scores may be further interpreted by means of age and grade equivalents.

The norms are reliable and meaningful and are based on a nation-wide testing of over 350,000 pupils in 200 administrative units in 35 states. Two types of norms are provided with the test: (1) norms based on modal-age groups—that is, groups from which accelerated or retarded pupils have been eliminated; (2) traditional norms based on total population tested. A major advantage of the modal-age norms arises from the fact that the average score for the modal-age group in a given grade is equal to the average score for the modal-age group having the given age; thus there is no hiatus between the age and grade norms. Supplementary percentile norms are available on request from the publishers.

In using these modal-age norms, it is necessary to remember that the obtained pupil score is being compared with the average score of pupils who have entered school at the normal age and have made normal school progress through the grades. If all summaries are made in terms of the equated scores, the average of the equated scores in each subject can be interpreted in terms of either set of norms at will.

The test was designed to measure, with fair emphasis as to parts, all the most important phases of elementary and junior high school work and thus, of course, does not reflect the sundry emphases of any particular school or school system. When used in such a school it yields a measure of departure from national tendency. The "goodness" or "badness" of any departure or agreement found is a matter of the set of values of the educator interpreting the data.

The validity of content was determined by a thoroughgoing analysis of representative courses of study for the entire country, careful evaluation by experts in the various subject fields, and rigid statistical evaluation. The reliability of the total score for successive grade groups is equal to .95+ to a close approximation. The reliabilities of its parts are reasonably high. The corrected split-half reliability coefficients for the total reading test score for Grade 8 is .93; for spelling, .93; for language usage, .82; for literature, .77; for Social Studies I (history and civics), .79; for Social Studies II (geography), .84; for science, .74; and for total arithmetic, .92.

The uses to which the test score may be put fall under two main divisions; namely, administration and guidance. Perhaps the most common use of the test scores is that which involves checking the educational achievement of the community against the national norms. The second major use is the evaluation of performance of local sub-groups in relation to the administrative unit as a whole. A third major use is the analysis of achievement within a given school. The most important application of all is for the identification of those who need a modified adjustment or remedial attention, either in separate classes or within a classroom.

Directions for Administering are explicit. Scoring has been simplified by the use of marginal answer spaces. Six of the subtests of the Intermediate and Advanced Batteries may be corrected with a stencil key. A special edition of the Intermediate and Advanced Batteries (Forms Dm, Em, and Fm) is published for use with separate answer sheets for machine scoring. The Language Arts and Arithmetic Tests of Form Fm were released in 1946, but the separate subject matter tests were not published. The total working time for the entire Intermediate Battery or Advanced Battery is approximately 170 minutes. The working time of the Primary Battery is approximately 80 minutes.

The *Profile Chart,* which appears on each test booklet, is a graphic aid in the study of inter- and intra-individual differences and also provides a simple means by which any average in terms of equated scores may be expressed as an age or grade equivalent.

The chief function of the instrument is for individual placement and guidance in connection with school status, or vocational status for such vocations as call for competence along lines similar to these scholastic abilities.

The test is published by World Book Company, Yonkers-on-Hudson, New York.

T. L. K.

ACHIEVEMENT TESTS, USE OF. An achievement test is supposed to measure what an individual has learned. Performance on an achievement test, expressed in terms of a score, is used to estimate proficiency in school work as well as proficiency in a trade or occupation. The complete measure of achievement in a given area involves a determination of how quickly, how accurately, how well, and at what level of difficulty an individual can perform the tasks taken to represent accomplishment.

However, it is important to realize that the name of a test and its stated purpose do not determine its guidance value. Any test—whether it is called a test of achievement, aptitude, intelligence, personality, or interests—may be used to measure aptitude if performance on that test has been demonstrated to predict future educational or vocational progress. Thus, despite its name, an achievement test may be used to estimate a student's aptitude or capacity to profit from additional training by ascertaining the relationship between his present accomplishment and the amount of training to which he has been exposed. For example, although differing in name, there is a close relationship between batteries of general achievement tests and tests of general intelligence. While achievement tests are supposed to measure the extent to which an individual has learned, and intelligence tests are intended to measure an individual's potentiality for learning, the community of function between intelligence tests and achievement batteries is about 90 per cent. (Among intelligence tests the community of function is about 95 per cent.) This raises the question as to why the two types of tests are needed when they seem to be measuring the same function. The answer is to be found in the frequency with which counselors encounter problems of discrepancy between aptitude and achievement. There is not always a one-to-one relationship between an individual's scholastic aptitude and the realization or achievement of this aptitude.

The effectiveness of the vocational counselor, concerned as he is with interrelated problems of educational and vocational choice, varies in direct proportion to his knowledge about the student; and, as an active participant in the guidance process, the student is aided in becoming self-guiding to the extent that he acquires insights into his characteristics and needs. The use of achievement tests to provide significant information about an individual thus becomes important to counselor and counselee.

Achievement tests in school subjects constitute the largest segment of published or commercial tests, due in part to the great emphasis in our schools on subject matter. By 1910, prior to the development of trade achievement tests by the United States Army in World War I, academic achievement testing in American schools had made a good beginning. While progress has been made in the direction of revising and condensing existing achievement tests and extending their use into higher levels of education, there has been no major advance relating specifically to their use in counseling students. The measurement of student achievement in out-of-school work-experiences, extra-classroom activities, hobbies, personality development, etc., remains largely unexplored territory.

Standardized tests of academic achievement differ from traditional teacher-made tests not only in length, range of content, objectivity, and technical refinement of construction, but chiefly in the bases of comparison afforded by age, grade, and percentile norms. Standardized achievement tests cover a range of work of several grades, whereas teacher-made tests are usually predicated upon the work of a given unit or semester of work. This width of range of content obviously requires a larger number of questions than those normally included in the classroom teacher's tests, and the greater number of questions in the achievement test battery requires considerably more time for completion than the usual classroom period. The bulk of teacher-test questions are essay type, while standardized achievement tests are characterized by objective questions which virtually eliminate variations in judgment in scoring answers.

How Achievement Tests Are Constructed

Standardized achievement tests are usually constructed with great labor and care. A group of subject-matter specialists comb text-books, courses of study, syllabi and other teaching materials from a great many sources. Selected for inclusion in preliminary editions of the tests are questions representative of teaching practices in many schools, in many regions. Only items frequently and widely used are selected; an item encountered perhaps in only one isolated school or text-book would not be regarded as sufficiently representative for inclusion.

The test items then are formulated so as to elicit answers which can be objectively scored. Objectivity is brought about by phrasing the question in such a way as to elicit one correct answer (in rare instances more than one), thereby eliminating variations due to differences in judgment among test-scorers. Typical objective or "new-type" test items are: the dichotomous true-false or yes-no item; the multiple-choice or "cafeteria" type of question which lists three to five alternatives from which to choose; matching questions in which items from one column are paired with correct choices from items in another column; completion or fill-in items in which the correct answer is to be entered in a given space to complete a statement; and best-answer, in which all of the alternatives are at least partially correct with, however, only one best answer.

All of the items are then tried out on pupils. Poor items are eliminated through a careful analysis of responses; some items are ambiguous, other items are lacking in discriminatory power in that they fail to distinguish between individuals who score high and individuals who score low on the entire test, etc. Time limits are also established during the try-out process.

Finally, the test is standardized by establishing norms for each grade or age group within the test range and by determining estimates of the reliability and validity of the instrument. A table of norms describes how the raw test scores are distributed within a representative sample of the population of a given age or grade level, and usually includes measures of central tendency (mean, median, etc.), measures of variability (standard deviation), and the reliability and validity of test scores (standard and probable errors of an obtained score, etc.). By reliability is meant the consistency with which a test measures what it is supposed to measure; a test is said to be reliable if individuals taking it a second time make scores differing very little from their first scores. Validity of achievement tests, which refers to how faithfully or well the test measures what it is supposed to measure, is insured by the care with which representative test items are collected and formulated, as well as by the process of eliminating all test items which do not discriminate between high- and low-scoring individuals.

Educational and Accomplishment Quotients

The popularity of the I.Q. or intelligence quotient has led to the formulation and use of many other kinds of ratios, including educational and accomplishment quotients. Most of these quotients are determined, logically and mathematically, in the same way as the I.Q., and they possess similar limitations. Subject-matter or educational age divided by chronological age and multiplied by 100 gives the educational quotient, E.Q. The accomplishment quotient represents a method of determining whether a pupil is achieving instructional objectives to his full capacity. The A.Q., accomplishment quotient, is equal to the educational age divided by mental age and multiplied by 100. When the achievement tests and intelligence tests have not been administered at the same time, the E.Q. and the I.Q. are sometimes substituted in the formula for the A.Q.; A.Q. is then equal to E.Q. ÷ I.Q. × 100.

The accomplishment quotient is held to be of limited value in individual and group measurement. Rarely derived from the same population sample, the age norms for the two tests used to compute the A.Q. are not strictly comparable. Furthermore, since courses of study in most schools are geared to average and below-average students, those of superior ability are frequently described by the A.Q. as underachievers (A.Q. below 100) while the average and below-average pupils are often described as overachievers (A.Q. over 100). Finally, as stated at the outset, the name of a test does not indicate what it measures: despite different names, achievement-test batteries and intelligence tests are highly correlated. The determination of level of accomplishment by means of a ratio derived from such closely related tests is a procedure of dubious logic ("jangle fallacy").

Kinds of Achievement Tests

Achievement tests differ in form. As stated above, the dimensions of accomplishment in a given area may be described in terms of speed, accuracy, quality, and level of difficulty with which an individual can perform the tasks taken to represent achievement. Accordingly, there are tests of speed or rate, of power, and of quality or product. A speed test consists of a number of items approximately equal in difficulty; usually no one can finish the test in the allotted time, and the score is based on the number of items correctly completed within the time limit. A power test, on the other hand, consists of items scaled in increasing levels of difficulty, with ample time to complete the test provided the individual can perform at all difficulty levels included. In a quality scale there are no wrong or right answers, but provision is made for judging qualitatively such skills as composition, handwriting, and woodwork, by comparing a given specimen or sample with graded samples whose quality has been previously determined.

Achievement tests are also classified according to their function. Most academic tests are survey tests, covering a wide area of achievement. Other tests are in specific subject fields; some of these are diagnostic, yielding separate measures of related abilities to indicate specific strengths and weaknesses. About two-fifths of the achievement tests used are in English and related language tools and arts: reading, grammar, spelling, vocabulary, composition, and literature. About one-fifth of the tests are in achievement in mathematics. General achievement test batteries of the survey type covering several fields constitute about one-seventh of the academic achievement tests in use. The single subject test may have sub-tests; for example, a test in arithmetic may have sub-tests in subtraction, addition, multiplication, etc. A typical battery of tests, the New Stanford Achievement Test (Advanced) for use in upper elementary grades and junior-high school, contains ten examinations: paragraph meaning; word meaning; spelling; language usage; literature; history and civics; geography; physiology and hygiene; arithmetical reasoning; and arithmetical computation. Further examples of test batteries are the Iowa High School Content Examination, the Metropolitan Achievement Test, and the Sones-Harry Achievement Test.

Measures of occupational proficiency or trade tests are also of considerable value in counseling. These tests are of special interest to students taking vocational education courses. Most trade tests are paper-and-pencil or performance tests, although oral tests are also used. Test items may consist of pictures of tools or apparatus or the usual types of objective questions designed to measure information and skills. An example of a standardized performance test of proficiency is O'Rourke's Civil Service Examination for Stenographers and Typists, which measures the subject's ability to type from rough copy. Some trade tests are quality scales consisting of graded samples or models of finished work against which the subject's product is compared.

Guidance Values of Achievement Tests

The chief guidance values of achievement tests are: (1) comparison of the accomplishment of one individual with others of his grade, age, sex, training course, or occupation; (2) comparison of an individual's present performance with his past performance to provide a gage of progress; (3) comparison of an individual's present performance with the opportunities he has had for acquiring the information and skills measured by the test; (4) comparison of an individual's achievement with his capacity or aptitude for achieving; (5) comparison of the individual's performance in one field with his performance in other fields to determine his relative strengths and weaknesses; (6) diagnosis of an individual's performance in a specified field or subject to prescribe remedial measures for improvement; (7) determination of the level of achievement in various courses, departments, schools, and colleges for use in counseling the individual student in making educational choices (leading in turn to vocational choices) which will permit him to compete favorably with those of like levels of accomplishment; (8) comparison of traditional teacher-grades with objective measurements of achievement, thus offsetting the effects of bias arising out of such factors as deportment, sex preference (girls usually receive higher marks than boys although there is no sex difference in achievement), personality conflict, favoritism, etc.; and (9) prediction of the individual's future achievement on the basis of his past achievement.

Selecting Achievement Tests for Use in Counseling

How shall the counselor determine which achievement test or tests to use for an individual? The following questions, satisfactorily answered, may constitute a guide for the selection of appropriate tests by the counselor: (1) What information is already available about the scholastic abilities, mechanical ingenuity, interest patterns, personality, musical talent, art talent, etc., of the student? (2) In what detail have cumulative records included previous test scores? What test or tests were given? Where, when, why, and by whom were the tests administered? How reliable and valid were the tests? How well were they standardized? What form of a test was used? (Good tests usually have two or more alternate forms.) Are the test scores in raw scores or transmuted scores, such as percentiles, standard scores, etc.; and with which group or groups was the individual being compared? To what use have previous test scores been put? (3) For what purpose is the present test to be used? What are the possible conclusions to be expected from administering this test? (4) How does this individual compare with the population upon whom the test was standardized? (5) How reliable and valid is the test? (6) How well does the test differentiate or discriminate between groups? Do pupils of a given grade score higher on the average than pupils of the next lower grade, and lower than pupils of the next higher grade? (7) What norms are available—national, local, occupational, grade, age, percentile? (8) Who is to administer the test? Has he the training and experience necessary to give this test? (9) Can the test performance be made a meaningful experience for the individual?

The information sought through the foregoing questions may be found in test manuals, journal articles describing the construction of specific tests, catalogues of test publishers, and measurement handbooks such as Buros' *Mental Measurement Yearbooks.*

Cautions in the Use of Achievement Tests

Certain cautions in the use of achievement tests should be observed. The test manual usually reports the reliability only for the total test battery, yet the teacher or counselor is often urged to obtain and use scores on sub-tests; but the sub-tests may not be sufficiently reliable for group measurement. Also, it is importan to stress that standardized achievement tests are not meant to supplant local teachers' examinations, which have their value. Another caution concerns the neglect which overemphasis on standardized achievement tests may foster in developing ways of measuring more desirable life experiences, such as growth in personality, improvement in democratic attitudes, and the like.

Sometimes assumptions basic to the use of achievement tests ar violated. One fundamental assumption is that the test is administered exactly as prescribed, namely in the same way in which th test was given when being standardized. Another assumption is tha the test provides the individual with a fair opportunity to demonstrate his ability in the particular field being measured; thus, a chil brought here from France with scant or no knowledge of Englis does not have an opportunity to display his ability in geography, for example, if he is given a geography test in English. Finally, it is assumed that the individual's behavior on the test is representative or typical of his behavior (performance) in that field.

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S. H. F.

ACROPHOBIA. The chief fields in which the worker must be devoid of fear of high places are in communication as the telephone lineman; in the building trades as welders, and steel construction workers; in the professions as the architect and the civil engineer, and in transportation certain railroad workers.

E. E. F.

ALLIANCE FOR GUIDANCE OF RURAL YOUTH. This organization has as its primary purpose the promotion of adequate guidance for rural youth. Most of its research and rural field service activities are carried on from Richmond, Virginia, but its work with other organizations is largely centered in the nation's capitol. The Alliance for Guidance of Rural Youth maintains a technical advisory council in Washington, sponsors an annual Institute, and conducts an annual series of luncheon forums for the benefit of groups interested in youth, particularly rural youth. Persons affiliated with public and private agencies work together on rural-urban problems and publish their findings. The Alliance is a member of the Council of Guidance and Personnel Associations.

For further information, write to Mr. O. Latham Hatcher, President, Alliance for Guidance of Rural Youth, Gresham Court, Richmond 20, Virginia.

R. Z. K.

AMERICAN COUNCIL ON EDUCATION PSYCHOLOGICAL EXAMINATION (College). Revised each year and pointed toward college freshmen, the American Council on Education Psychological Examination is one of the best and most widely used intelligence tests for superior adults. The examination consists of six sub-tests: arithmetic, completion, figure analogies, same-opposite, number series, and verbal analogies. Practice problems are given in advance of each of the sub-tests and there are time limits for the various sections. It takes about an hour to administer the examination.

The linguistic tests yield higher correlations with grades in the liberal arts colleges than do the quantitative tests. However, the latter may be more significant for technical and scientific curricula.

Results are evaluated in terms of percentile rank and norms are revised each year, with breakdowns by sex, language scores, and quantitative scores. The examination can be machine-scored and is also easily scored by hand.

Additional information may be obtained from the authors of the Examination, L. L. Thurstone and Thelma Gwinn Thurstone, University of Chicago, Chicago, Illinois. The College and High School (a four section test requiring one hour) forms of the American Council on Education Psychological Examination can be ordered from the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

R. Z. K.

ACTING, APTITUDE FOR. Though acting has been recognized for centuries as a minor art, and though it has been written of critically and analytically, the standards by which it is judged and the actual objectives of the actor, the very nature of the task he is asked to perform, change so from generation to generation that nothing written in one age holds good for another. As styles of drama evolve, as the theatres in which plays are performed alter with their social function, the styles and techniques of actors must change too. Thus, an actor skilled in grandiose and formal gesture and equipped to deliver through a megaphonic mask the verse of Sophocles in the theatre of Dionysius in the fifth century B.C. in Athens would conceivably be lost playing a treatment of a Greek theme in modern terms like, let us say, "Mourning Becomes Electra" by Eugene O'Neill. Even a Talma, a revolutionary in his own time, naturalistic during a neo-classic period, might seem hopelessly stilted if he attempted today to play a character in a play by George S. Kaufman in a Broadway theatre seating only a thousand people.

It is not only style which changes; it is the very object of acting. I leave out of account the various forms of entertainment which exist today and have always, in some form or other, existed. I do not take into account the aim of the singer, the acrobat, the ballet dancer, the entertainer who, to some degree, *presents* himself directly, as a virtuoso of sorts, to an audience. I confine this discussion entirely to those actors who *represent* characters in a dramatic composition, who assume for the purposes of the drama a personality and character other than their own.

In spite of change of style and objective, we may use of the actor today a classic word in naming his prime qualification—he is fundamentally a mime. That is, like a player in the ancient mimes, he is skilled in the imitation of the gestures and speech of everyday persons. Our acting today, like our drama, stems not from great classic example but from the more popular diversions that flourished even in Athens alongside the austere and ceremonial plays which have come down to us. Closer to our time, there is more kinship between contemporary drama and the moralities of the guilds, and probably between the acting that served them and that which serves today's plays, than there is between the elegant masques of the court and even the most highly accomplished and formalized modern acting. The theatre today, speaking generally and for the occidental world, sets out to represent actions of daily life and even when its subject matter is historic or heroic, as with a play like Shaw's magnificent "St. Joan," the characters are depicted as kin of people we know and recognize and generally speak the language of our time.

The actor, therefore, must be one who has a talent for the observation and representation of his contemporaries, or for the translation of characters of other periods into terms acceptable to an audience of contemporaries.

This talent involves more than mere imitation of idiosyncracies. It ranges from the delineation of outward characteristics of voice, accent, posture and gait, to the most acute suggestion of psychological states and emotional changes. Representation is more than imitation, or rather it is imitation of the complete range of human action and emotion, composed by the imagination into a plausible statement of character in the circumstances set by the playwright in a particular drama.

Not more than a generation ago, a golden voice and tremendous authority gave a Sarah Bernhardt preeminence in the plays of Rostand or Corneille. An arresting personality, marked by unusual idiosyncrasies, did not prevent Sir Henry Irving from being an actor of exceptional gifts, in the sense in which the word is being used in this article. That their styles would appear ludicrous in the usual play of today does not mean that, if they were living now, they might not be able to employ their talents in the mastery of the accepted style of today. It does mean, however, that any account of the equipment needed for acting in terms of players of the past generation is invalid.

Thus, while an excellent and expressive voice are assets for an actor, they are not indispensable. Though a highly coordinated body, trained by dancing, fencing, or acrobatics, once considered invaluable to the actor, is an asset, it, likewise, is not indispensable. That the body and face should be expressive is an essential requirement for mimetic use. That they be beautiful or generalized in type is not essential.

The actor functions simultaneously in three ways: He represents a character not himself; he coordinates his playing with that of other actors engaged in representing characters in the same action; finally, he carries on his work in the presence of and projects it to an audience.

It follows that he must have native aptitudes which can be developed into skills for these three functions.

First, there must be the basic mimetic gift, detectable first as mere mimicry. This may later be developed by observation and experience into a wide knowledge of human conduct, fortified by psychological study, and animated by a lively imagination.

Second, the talent for coordination with others may appear first in the nature of play. Acting has been described as adult play and often we observe in child play the need for playmates to share in the exercise of the imagination. This is a tendency which can be followed through school life and is indispensable for the actor.

Thirdly, the prospective actor must have a gift for communication with others and a conviction that what he has to say or show to a group is important enough to make worthwhile the struggle against self-consciousness and the sense of inferiority. Contrary to common belief, lack of self-consciousness or narcissism in any degree are handicaps to the sincere and genuinely talented actor.

No scientific tests have been devised or applied to determine aptitude for acting. However, the talent usually manifests itself at a fairly early age and the common use of dramatic performances in schools as extra curricular activities gives frequent opportunities for its exercise. Although there are numerous conscientious dramatic schools, training is largely empiric, and develops talent by practice in performance. Teaching methods range from the older, pseudo-academic curricula of speech and voice training, various disciplines of bodily agility, stage "deportment' 'and the like, to the more subjective methods inspired by such men as Stanislavsky. Since the actor's instrument is his own body and intelligence, techniques for its mastery cannot be as objective and concrete as the technique for the mastery of an instrument wholly inert, inanimate and unvaried from others of its kind as, for example, one violin is from another. No two actors are alike in body or mind and the methods of discipline and mastery that apply to one cannot apply equally well to another. It is part of the nature of the art and its attraction that every player be different from every other.

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I. P.

ADVISER, PERMANENT. The essence of good guidance is continued, firm, wise friendship of teacher for pupil. No series of administrative devices can be substituted for this human relationship. However, these devices can be made to function through that relationship. It can guarantee the inevitability of service.

It has been said that "every teacher is a counselor." This statement has too often been an excuse for failure to organize a guidance program, but when it has been made in good conscience, it has meant just what the permanent advisory system accomplishes. The teacher becomes truly a counselor in the very best sense of the word.

For the purposes of this article, the term "advisor" (in some schools "sponsor") is a teacher, any teacher, every teacher, to whom a pupil is assigned when he is admitted to school and who retains the pupil as his special charge for the full four years of his high school career. The advisor is thus distinguished from the counselor who has been specially trained in the techniques of guidance—testing, statistics, research, occupational analysis, psychiatric service, and so on. The advisor acts as the "school parent." He has a family of from twenty-five to thirty-five children, growing up in his care, four or five being graduated each year and seven or eight being admitted to the family circle. If the assignments are made on an alphabetical basis, members of the same home family will be in the same school family. If the assignments are made on the basis of special interests, the school family will be homogeneous in that respect. The great advantage for school administration is that, in whatever situation a pupil finds himself, for better or for worse, an immediate and easy reference can be made to the person who knows most about the pupil, the advisor.

What does the advisor do? (1) He meets his group every morning for the home room period during which he conducts activities, or gets his pupils to conduct activities, of interest to the group. (2) At the beginning or end of the home room period or, if he is clever, during the home room period (the pupils will be carrying on the lesson), he checks attendance, lateness, takes care of the accounting. (3) He keeps the cumulative record of each pupil, makes all entries, sees that the data are produced for these entries—personality, work traits, conduct, extra-curricular activities, personal anecdotes, and so on. In effect, he becomes the pupil's biographer. (4) During assigned periods in his weekly program he counsels his pupils individually, calling them from any class, and makes appropriate entries in the cumulative record card. (5) He makes out the pupil's individual program for each term on the basis of a master plan for the full four years. He recommends changes in this program whenever they seem desirable. (6) He maintains contacts with the pupil's parents, seeing them either in their home or in school. He maintains contact with all the other members of the faculty in the interest of his pupils. (7) He brings all the services of the school and of the community to bear upon his pupils. While he does not do the testing, or the placement or the health counseling or the assignment to athletics, he does see that his pupils come under the influence of these activities, according to their needs, and he is held responsible by the administration for the full development of his pupils through these means. Similarly, he sees that a pupil uses the public library, the public welfare organizations, the church, the business organization—all the community resources, again, according to his needs. (8) The advisor *lives* with his pupils, is continually concerned about them, sees that they do not neglect their obligations, and sees that the school does not neglect *its* obligations.

On occasion it has been noted that the weakness of a home room period conducted at the beginning of the day, by the teacher responsible for pupil accounting, is that the keeping of records crowds out the home room lesson. Where these conditions prevail, the weakness is one of human nature and of administration. Human nature takes care of itself when the teacher truly becomes the advisor and gradually realizes the sacred obligation of a school parent. The weakness of administration arises from failure to provide time or supervision for the advisor. Since the teacher, in his advisory capacity, is a member of the guidance faculty, he should receive this supervision from the person in charge of the school's guidance program. If he does, he will be both efficient and happy.

One weakness in the permanent advisory system is that there will inevitably be some less efficient teachers who, if designated as advisors, will exercise little or no good influence over the unfortunate pupils assigned to them for four years. The only answer is to excuse such teachers from the duty or to eliminate them. Pupils themselves recognize this weakness very quickly and it is their one complaint against the permanent advisory system. Otherwise, they are loud in its praise. They say that the advisor is *not* a teacher, but a second father or mother. They take their joys and their troubles to their advisor. After graduation they visit the school repeatedly, primarily to see their advisor. Top praise comes from that pupil who wrote, "Your section advisor is a sort of sanctuary."

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F. J. K.

APPRENTICESHIP TRAINING IN THE UNITED STATES.

During the past 10 years real progress has been made in the establishment of a National Apprenticeship Program. Although, definitely retarded during the war years a general revival of interest is now evident in all fields of trade and industrial activity and on all levels of service, local, State and Federal. The efforts of agencies and groups responsible for the promotion of apprenticeship have developed a broad understanding of what apprenticeship means. Successful programs now in operation give evidence of the effectiveness of apprentice training and whether these programs are operating in conjunction with the National program or whether operating independently within a plant or industry the same basic standards are generally adhered to. Following is a statement of policy, a definition of apprentice and the basic standards approved by the Federal Committee on Apprenticeship, the labor-management policy body for the Apprentice Training Service, U. S. Department of Labor:

Apprenticeship Policy

Programs for the employment and training of apprentices should be jointly developed and mutually satisfactory to the employers and to the employees. That, in brief, is a basic policy of the Apprentice-Training Service. Since apprentices are employed in a wide variety and constantly growing number of trades, the standards recommended by the Federal Committee on Apprenticeship are general in scope, leaving to the employers and employees in the different trades the responsibility for working out details. The following are the standards which guide the staff of the Apprentice-Training Service in assisting industry to set up systems for the training of apprentices:

Definition of Apprentice

The term "apprentice" shall mean a person at least 16 years of age who is covered by a written agreement registered with a State Apprenticeship Council (where no such Council exists registration is with the Federal Committee on Apprenticeship) providing for not less than 4,000 hours of reasonably continuous employment for such person, and for his participation in an approved schedule of work experience through employment, which should be supplemented by 144 hours per year of related classroom instruction.

Basic Standards

1. An apprenticeable occupation is considered one which requires 4,000 or more hours to learn.
2. A schedule of the work processes to be learned on the job.
3. A progressively increasing scale of wages for the apprentice that should average approximately 50 percent of the journeymen's rate over the period of apprenticeship.
4. Provision for related classroom instruction (144 hours per year of such instruction is normally considered necessary).
5. The terms and conditions of the employment and training of each apprentice to be stated in a written agreement and registered with the State Apprenticeship Council.
6. Review of local apprenticeship by a State Apprenticeship Council.
7. Apprenticeship should be jointly established by the employer and the employees.
8. Adequate supervision and the keeping of records should be required for all apprenticeship programs.

Apprenticeship has existed in this country since the earliest colonial times and some splendid examples of apprentice training have been developed during the past generations. The Federal Government has been training apprentices in its own plants and shops such as Navy yards, arsenals, and printing and engraving establishments for many years. On the other hand in many places apprenticeship existed in name only. Shortly before 1900 it appeared that modern mass production methods and new developments in industrial processes would bring to an end the ancient institution known as apprenticeship. However, regardless of these changes manufacturing, construction, and other trade and industrial fields still required skilled hands and trained minds in increasing numbers.

The need for an organized industrial training program under public supervision and control became apparent and with the approach of World War I the Smith-Hughes Act (Public No. 347, 64th Congress) was passed. Through this Act the public schools were financially assisted in the development of part-time and evening industrial classes for persons engaged in trades and industries. The establishment of these classes made it possible for apprentices and other industrial workers to obtain the technical knowledge needed on the job and prepare themselves for advancement in their chosen trades.

In 1923, six years after passage of the Smith-Hughes Act the Federal Board for Vocational Education made a survey of part-time education and other forms of extension training in their relation to apprenticeship in the United States. That study indicated that while Wisconsin was the only State at that time which had a law providing for State supervision of the contract and training of apprentices, many States and local communities were voluntarily cooperating in the interest of better educational opportunities for these prospective artisans. Under the Wisconsin law, apprentice training was an integral part of the work of the part-time schools of that State. In a large number of other states in which there were no specific apprenticeship laws the part-time schools were also rendering service to these young workers.

The Federal Committee on Apprenticeship

Establishment of Trade and Industrial Education under the Smith-Hughes Act was perhaps the first definite step in the development of a comprehensive Nation-wide apprenticeship program. The next constructive move was the study of apprenticeship and other forms of training for wage earning occupations under the N.R.A.[4] codes which resulted eventually in the creation of the Federal Committee on Apprenticeship. This Committee composed of representatives of employees, employers and government agencies including the U. S. Office of Education was created in 1934 and by Act of Congress was made a permanent agency under the U. S. Department of Labor in 1937. During World War II the Apprentice Training Service was transferred from the Department of Labor to the F.S.A. later it was transferred to the W.M.C.; at the end of the war it was transferred back to and now operates under the U. S. Department of Labor.

Cooperation with the U. S. Office of Education

In order to prevent overlapping of the functions and the duties of the United States Office of Education and the Federal Committee on Apprentice Training—the two Federal organizations having to do with promoting the program of apprentice training—these agencies have entered into an agreement under which the United States Office of Education, cooperating with State departments of vocational education, is to be responsible for the apprentice as a student, and the Federal Committee on Apprenticeship, through State apprenticeship councils, confines its activities to the apprentice as an employed worker.

Under this arrangement the functions of the United States Office of Education are to see that the related technical and supplemental instruction needed to make the apprentice and proficient worker is provided, and also that this instruction is coordinated with his job experience.

The function of the Federal Committee on Apprenticeship, on the other hand, is to exercise supervision over the apprentice as a worker. This includes attention to such matters as rates of pay, hours of work, the length of the apprentice-training period, and the ratio of the number of apprentices to the number of journeymen. Attention to the latter precaution is necessary to prevent an overcrowding or shortage of skilled workers.

State Apprenticeship Councils

The Federal Committee on Apprenticeship provides trained field representatives to promote apprentice training in the various trades and industries, to cooperate with State councils, local apprenticeship committees and vocational school authorities in organizing apprentice programs. The work of these field representatives has greatly stimulated interest and activity in apprentice training throughout the country. It is safe to say that every State now has some agency or department that is responsible for promoting and operating the program. Within recent years a number of States have passed legislation providing specifically for State programs of apprentice training, others have established State Apprenticeship Councils or are in the process of organizing them.

These State Councils are made up of an equal number of representatives of employers and employees and usually a representative of the State Board for Vocational Education and a representative of the State Department of Labor.

Using the apprenticeship standards recommended by the Federal Committee on Apprenticeship as a guide, the State Councils set up their own standards and procedures which industry will be asked to follow in employing and training apprentices.

After a State Council has been appointed and has prepared its standards and procedures it becomes a part of the national apprenticeship system by securing recognition from the Apprentice-Training Service.

The following are among Councils already approved by the Federal Committee on Apprenticeship:

* Arizona Apprenticeship Council, Phoenix, Ariz.
* Arkansas Apprenticeship Council, Little Rock, Ark.
* California Apprenticeship Council, San Francisco, Calif.
Connecticut Apprenticeship Council, Hartford, Conn.
Florida Apprenticeship Council, Tallahassee, Fla.
* Hawaii Apprenticeship Council, Honolulu, Hawaii.
Iowa Apprenticeship Council, Des Moines, Iowa.
Kansas Apprenticeship Council, Topeka, Kans.
* Kentucky Apprenticeship Council, Lexington, Ky.
* Maine Apprenticeship Council, Augusta, Maine.
* Massachusetts State Commission on Apprentice Training, Boston, Mass.
* Minnesota Apprenticeship Council, St. Paul, Minn.
* Montana Apprenticeship Council, Helena, Mont.
* Nevada Apprenticeship Council, Carson City, Nev.
New Hampshire Apprenticeship Council, Manchester, N. H.
* New Mexico, Apprenticeship Council, Albuquerque, N. Mex.
* New York State Apprenticeship Council, New York, N. Y.
* North Carolina Apprenticeship Council, Raleigh, N. C.
Ohio Apprenticeship Council, Columbus, Ohio.
* Oregon Apprenticeship Council, Salem, Oregon.
Pennsylvania Apprenticeship Council, Harrisburg, Pa.
Rhode Island Apprenticeship Council, Providence, R. I.
* Vermont Apprenticeship Council, Montpelier, Vt.
*Virginia Apprenticeship Council, Richmond, Va.
* Washington Apprenticeship Council, Seattle, Wash.
* Wisconsin Industrial Commission, Apprenticeship Division, Madison, Wis.

* State apprenticeship law enacted.

Local Joint Trade Apprenticeship Committees

Since the actual employment and training of apprentices takes place in local communities, it is apparent that all of the work of national and State apprenticeship groups is directed toward securing interest and action on the part of local employers and employees.

In those trades where both employers and employees maintain local organizations the objective is to secure the appointment of a local joint apprenticeship committee for the particular trade. This committee is given the responsibility by the appointing organizations to develop standards to govern the employment and training of all apprentices in the trade by all employers in the group and by other employers who may not be members of the employers' organization but who are willing to subscribe to the written apprentice training system.

Included in the written program, besides the standards of employment and training, are procedures for the supervision and examination of the apprentices.

The employment standards establish qualifications for employment such as the amount of required education, aptitude, age limitations, wages, hours of work, and any other particulars which concern the apprentice as a worker. The training standards establish the term of apprenticeship, the schedule of job processes in which the apprentice is to be provided practical work experience through his employment, and the amount of time the apprentice will be required to attend classes to receive instruction in subjects related to his trade.

Responsibility for providing the related trade instruction rests in the local and State vocational schools. The joint apprenticeship committee usually is appointed by the school to act in an advisory capacity to it in developing the program of classroom instruction to be given by apprentices and to provide such continuing advisory service as is needed to assure a well rounded training program.

The procedures prescribe the manner in which written apprenticeship agreements are executed and registered with the State Apprenticeship Council; they outline the way in which apprentices will be supervised at work and at school and such other operating particulars as agreed upon by the employers and employees.

In the final apprenticeship system the continuing responsibility of the joint committee will be defined. Usually in the building trades the employer and employee groups give the joint committee a continuing operating responsibility. In the manufacturing industries the joint committee is given a continuing advisory responsibility;

it exercises a review function rather than a direct supervisory function.

Plant Joint Committees

Where it is more practical the employer and his employees, if the latter have an organization, are encouraged to set up a plant joint committee to prepare in writing an apprenticeship system to define the conditions of employment and training for apprentices in the plant. Both types of committees usually make provision, especially where apprentices are employed in plants, for a full or part time supervisor of apprentices and describe his functions in relation to those of the Committee.

No Local Joint Committee

Where employees in a plant do not have an organization or where the existing employee organization is not particularly concerned with the training of skilled workers, the employer establishes his own apprenticeship system and registers it with his State Council.

Since the State Council is made up of equal employer and labor representation and has agreed upon basic standards for the training of apprentices, its review and registration of the employers apprenticeship system is construed as meeting the basic policy of the national apprenticeship system.

Registration of Apprenticeship Agreements

Local apprenticeship systems provide for the registration of individual agreements between apprentices and their employers with the State Apprenticeship Council. This registration serves to safeguard the interests of the apprentices in several respects and at the same time establishes a national inventory of the total number of apprentices in training by trade classifications and the approximate number of apprentices in each period of the term of apprenticeship.

The review and registration of the individual agreements makes a public record of the fact that the apprentice is being employed and trained in an occupation and under standards recognized by industry and public agencies as being adequate to produce a qualified all-around skilled worker; it provides a record against which the apprentice and future employers in later years can establish facts regarding the worker's training; it serves as a check against the hiring of an apprentice who is under contract to another employer or of the employment of a worker as an apprentice without adequate credit for his previous experience; and it provides the basis for the issuance by the State Council of Certificates of Completion of Apprenticeship.

Setting up a Training Course

Under the apprentice-training plan usually followed the apprentice is placed as soon as he starts his apprenticeship under the instruction of a journeyman or foreman. In this way he receives practical training in the manipulative processes of the trade on actual production work. It has been shown that with proper supervision and properly graded jobs the apprentice instructed according to this plan can do a considerable amount of work which will be entirely satisfactory and at the same time result in training in the trade or occupation. This method of training is advantageous to both the employer and the apprentice. The apprentice is not only a producer but he has the satisfaction of knowing that he is getting experience in the practice of his trade.

Selecting the Shop Instructor

The first requirement is that the instructor be a competent journeyman and the second requirement is that he either knows how or will learn how to instruct. The employer, the foreman and the journeyman must be thoroughly in agreement with regards to the purposes of the training program if satisfactory results are to be obtained.

Subjects to be Included in Training Courses

Under the apprentice-training plan commonly followed, a definite amount of classroom instruction—usually from 4 to 8 hours a week—is given in general vocational subjects, job technical knowledge, and in auxiliary information related to the trade. The plan to be followed in giving this type of instruction is usually worked out in cooperation with local school authorities, who are authorized under the provisions of State vocational education acts to offer part-time instruction for employed youth. Some of the time allotted to related instruction may be devoted to training the apprentice in jobs in which he is unable to secure training under employment conditions. Training in these jobs, of course, must be given on an exercise basis or in the form of practice jobs.

Cooperation with Public Vocational School Essential

Public vocational schools are equipped to give only a part of the instruction which should be provided for apprentices. Technical and related subjects, including general vocational subjects can be taught better, of course, in a school than on the job. Adequate job training, on the other hand, can best be given an apprentice on the job under the supervision of a journeyman instructor. Where job training cannot be given in this way, schools can offer a fair amount of preliminary training, or many elementary jobs through the use of school shop facilities.

Apprentices can be partially trained in the full-time day trade school. In many instances agreements have been entered into between the employer and the school, whereby a boy who has received partial training in a vocational school will be given some credit on his apprenticeship period for the time he spent in school.

Federal and State Funds Available for Apprentice Training

Under the national vocational education acts, Federal grants are available to the States for the specific purpose of carrying on vocational education. These funds, moreover, are supplemented by State or local funds. Those in charge of apprentice training should bear in mind, therefore, that they can secure help in training programs from the public schools in their city or their State. Every State has set up a State board for vocational education, and has appointed a State director for vocational education, as well as a supervisor of trade and industrial education. Many of the larger cities, also, have appointed local city supervisors of industrial education. Those who are responsible for the establishment of apprentice-training classes, therefore, should get in touch with city superintendents of public instruction or local city supervisors and ascertain from them what assistance can be secured in organizing classes for apprentices in the public schools, whether local or State funds are available to help pay for an instructor in organized classes, what steps would be necessary to secure this instruction and to set up organized classes, and also what facilities are available in the schools for conducting such classes.

Those who are interested in apprentice training, also should bear in mind that the national vocational education acts provide Federal aid to the States for promoting training for journeymen selected to give instruction to apprentices. The journeyman will be particularly interested in this training as it will be necessary whereever courses are established to use journeymen as instructors.

Supervision of Apprentices

Supervision of apprentices is carried out in several different ways: For example, in the construction industry a joint apprenticeship committee is set up equally representative of the local labor organization and the employers. These committees are usually given direct authority by their contracting organizations to supervise the training of apprentices. In a number of cases where a large number of apprentices are employed a supervisor of apprentices may be engaged by the employers and the union acting jointly. He carries out his duties under the direction of the joint apprenticeship committee. In some cases the union alone may employ a supervisor and in other cases the supervisor may be employed by the contractors.

In the larger plants supervision of apprentices follows closely the general plan of supervision for other employees. The apprentice comes under the supervision of the foreman in whose department he is working, but the supervisor of apprentices, otherwise a staff officer, may have authority to move apprentices from department to department and to adjust complaints.

Even in the small shops some one is designated supervisor of apprentices. It is felt that for the program to be successful apprentices need specialized attention.

Supervision of Apprentices Courses

Supervision of apprentice courses by a coordinator is a service rendered by the schools. The primary function of these coordinators is to see that the related instruction given the apprentices is based upon an analysis of the trade, also, that instruction is given effectively and at the proper time. For example, if the apprentice has need for blue print reading during the first six months of his apprenticeship it should be given to him then and not deferred to a later time. The school needs of individuals varies greatly and the success of a coordinator will be measured to some extent by his ability to provide a custom-made related study course to each apprentice.

Apprenticeable Trades

Apprenticeable trades are found in every division of the trade and industrial field including the Building Trades, Metal Trades, Food Trades, Garment Trades, Printing Trades, Watch Making and Jewelry Trades, Aviation, Construction, Electrical, Textile, Shipbuilding, Railroad, Steel and other industries. However, there is on comprehensive list of apprenticeable trades available at the present time.

Apprenticeability is not always determined by the name given the occupation, but rather by the schedule of work processes contained in the occupation and which must be learned by the apprentice. For example, the term machinist apprentice would need further qualification as it might be in any of the following divisions: aircraft, automotive, marine, railroad or shipbuilding. The same is true of the sheetmetal trade and to a greater extent in the electrical industry. According to the National Apprenticeship and Training Standards prepared by the National Joint Apprenticeship and Training Committee for the Electrical Industry, the basic skill of the electrician rests upon a knowledge of electrical science. Basic training will have principally to do with the theories and fundamentals of electrical science; fundamentals of mathematics; mastery of electrical circuits and diagrams; electrical and mechanical drawings; laboratory testing.

The apprentice in the electrical trade must receive first of all basic training in the theory and fundamentals of electricity and craftsmanship and may pass to specialized training in any one of the following important branches of electrical science and the electrical trade:

Electrical construction
Line construction
Cable installation
Industrial electronics
Signal systems
Telephone, telegraph and communications
Light and Power systems (generation)
Light and Power systems (distributions)
Repairs and winding of electrical equipment (electrical maintenance)
Electrical railroad maintenance
Radio broadcasting
Marine electrical work
Rigging *
Welding *

There are also variations in views and practices with respect to the required period of training. Some trades may be learned in the minimum time of 4,000 hours or two years, others may require 3, 4 or 5 years. The practice varies as to the different trades and depends largely upon the extent of the manipulative skills in the occupation and the amount of related technical information needed to develop an all-around craftsman.

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* Segments of the craft performed in every branch of the trade.

Placement of Apprentices

The manner of entrance into apprenticeship will differ as such entrance must be made in accordance with the personnel practices of the trade, the industry, the plant, or the corporation in which apprenticeship is sought.

The local trade or plant written apprenticeship program specifies the way in which applicants will be selected and employed. Usually, there are more applicants for employment as apprentices than there are openings to be filled. First opportunities are in many instances offered the sons or daughters of workers in the particular industry providing they can meet the standards established for entrance into the trade as apprentices. Other apprentices are selected from the registers of the local office of the U. S. Employment Service. With respect to placement of applicants, close cooperation should be established between the local joint committee, the local vocational school and the local office of the U. S. Employment Service.

J. W. K. AND A. R. C.

APTITUDE TESTING. Many sources of information are employed by the guidance worker in assisting an individual to make vocational plans. Among the sources utilized are his interests, his personality, his intelligence, his scholastic accomplishment, his family circumstance, his financial status, his physical condition, his opportunities for training and employment, and the topic of the present article, his aptitudes. Warren's *Dictionary of Psychology* defines an aptitude as ". . . a condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some (usually specified) knowledge, skill, or set of responses such as the ability to speak a language, to produce music, etc." It is apparent that the emphasis in this definition of aptitude is upon prediction of future abilities on the basis of present characteristics. Acquisition is to come; proficiency does not yet exist. Nevertheless, information is available now on the potentiality of the individual to learn quickly and effectively in some specified situation. It is manifested in the form of aptitudes.

Aptitudes are determined through inference from the results of various tests, from occupational tryouts, from interests, from incidental learning about the field in question, from work in school courses, and from extra-curricular activities. Since tests have been found to be one of the most convenient and feasible indicators of aptitudes for use in the vocational guidance situation, attention will be focused upon them.

An aptitude test is one either expressly designed for or adapted to the task of indicating aptitude by means of an inference from performance. One does not observe the aptitude directly, rather the performances used as measures of aptitude generally take the form either of written answers to questions or problems, or of gross behavioral responses involving movements of the extremities. Certain kinds of variation in the performance found are explained by the assumption of an underlying variation of aptitude responsible for the behavior. It is evident that not all varieties of performance pertinent to aptitudes can be subsumed under any one aptitude, so, of necessity, there arises the further assumption of a variety of aptitudes qualitatively different from one another. Within an individual these aptitudes are manifested in varying degrees. Their relationship is relative and a matter of degree rather than all or none.

Contrary to the fallacious theory of compensation, low aptitude in one field is not invariably associated with high aptitude in another. Indeed it is impossible to predict from knowledge of the possession of a certain degree of a particular aptitude the degree of aptitude manifested in areas not closely allied with the one in question. The pattern of aptitude and inaptitude must be constructed anew for each individual.

The manifestation of an extremely high degree of aptitude for some field, commonly referred to as talent or genius, is an occasion in which one is especially prone to regard the inferred aptitude as the expression of an hereditary gift. Without denying that inheritance is one of the causes for the performance from which we infer the possession of an aptitude, no matter to what degree, it is perhaps best to hold in abeyance any final opinion on the question. The influence of motivation, interest, and environmental circumstances cannot be ignored. Fortunately it is not necessary to unravel the problem of "nature—nurture" in order to evaluate and to understand the aptitudes of an individual. The person seeking vocational guidance arrives in the counselling situation with his aptitudes relatively fixed. Aptitudes vary, but within limits often ascertainable in advance. Certainly they are stable enough for the vocational guidance worker to deal with them without concern over the ultimate findings in regard to this matter.

Types of Tests. It is possible to offer a list of the major categories of aptitude tests at present used in guidance work. There are special articles in this encyclopedia dealing with some of them. The majority of aptitude tests now in general use may be conveniently classified in the following categories: musical, artistic, scientific, mechanical, manual, clerical, and social. The tests in one or another of these categories cover some major occupational group where they are directly and self evidently applicable. The categories illustrate the areas of aptitude with which the vocational guidance worker has perhaps the best, certainly the most widely used, tools in the form of well known, reasonably valid, and reliable measures. This classification serves another purpose; namely, aptitude tests falling in some or all of these categories are used in evaluating vocational possibilities of a more specific nature. One client of a vocational guidance counselor may be considering becoming a drill press operator; another client, a sculptor. In both instances manual aptitude must be above a certain minimum. In addition, the first requires some modicum of mechanical aptitude, and the second, considerable artistic aptitude. These general categories, then, under which many aptitude tests may be subsumed, are convenient groupings from which tests may be selected for testing for more specific occupational problems. Many research studies using aptitude tests from these categories have been published describing the scores necessary for successful participation in a given occupation. Details may be found in the articles dealing with special aptitudes. Aside from tests that may be classified in these broad categories there is a considerable number of aptitude tests narrower in scope or more specific in nature. It is not feasible to list all the specific occupations for which there have been aptitude tests developed. A partial sampling of the literature might reveal tests devised for such diverse occupations as aircraft pilots, dressmakers, engineers, journalists, policemen, salesmen, and telegraph operators.

Construction and Validity. An aptitude test, since it is used as a means of prediction, must be constructed in such a manner that it contains material measuring those aptitudes which are required for success in a particular vocation, field, or course of study. To do this it has often been found necessary to combine either a number of tests into a test battery or to combine into a single test those items which serve as measures of several specific aptitudes. The method used is empirical for both test battery and conglomerate test. The investigator first makes a psychological analysis of the field. He attempts to formulate a concise picture of the activities that seem most important in the field in question. It is then inferred what aptitudes seem to be important in connection with these components. He next selects either a preliminary battery of tests, or constructs items which in his judgment are such that they exemplify by similarity or comparability activities which will measure the aptitudes that he earlier inferred were pertinent. Of necessity, these items or tests must be such that they would not depend unduly on special previous training not open to those to be ultimately tested. Subsequently, he gives these tests or test items to a group of individuals of known ability in the field under scrutiny as determined by ratings of proficiency, earnings, production, or other suitable criteria of performance. The answers that these subjects give with the adoption of some a priori scoring and weighting system allow the investigator to calculate test scores. By various techniques of item analysis, the exact details of which need not concern us here, all tests or test items are eliminated which are found to be contributing little or nothing to the relationship of the test to the criteria. The remaining items properly weighted predict, as closely as the original sampling of items and external criteria will allow, the relationship between scores on the test and proficiency in the vocation. Those tests or items surviving this selection can now be used for determining the aptitude in individuals whose aptitudes are not otherwise known. An important further step in investigating a test's validity, unfortunately sometimes neglected, is to administer it to a group who later expect to be engaged in the field. After some period of time in which the individuals have either been in training for, or engaged in, the occupation, a measure of their proficiency is then taken. This is used as the criterion and is compared with the original test scores. The degree of correspondence between these two sets of measures is evidence of the validity of the test.

It is imperative to note that only in those instances in which there is a substantial correlation with a small probable error between performance on the test battery and performance in the occupation can one conclude that the test is valid and, therefore, useful in prediction of future success in a given occupation or field. Otherwise the test will not measure what it purports to measure. Notwithstanding their extensive use in vocational guidance, many tests with high reliabilities and contents apparently related to the vocations or fields in question are found to have disappointingly low validity coefficients. It must be remembered that an aptitude test is not necessarily valid simply because items have been assembled, percentile norms prepared, and the measure placed on the market labeled, "An Aptitude Test for Snipe Hunting." Unless the test is a valid one, careful administration, scoring, and a masterly interpretation of the percentile position of the student would be futile and misleading.

Before any test is used in guidance procedure, the studies of its validity should be carefully scrutinized. Direct consultation of the experimental literature is more desirable than reference to one or another of the test handbooks, notwithstanding the value of such publications. A high correlation between a test and its criterion may be taken as evidence of validity if both test and criterion are reliable. In this connection it is also pertinent to have information on the standard error of estimate of a true score and the standard error of measurement. Both give information about the degree of variation of the estimated true score from the obtained score. An estimated true score is the most probable score if all variable errors of measurement are eliminated.

Achievement, Trade, Intelligence, and Physical Capacity Tests. As mentioned in the description of an aptitude test, some measures originally designed for other purposes are adapted to the task of the measurement of aptitudes. They are so utilized when such tests are given for the purpose of predicting success in a given subject matter field, occupational sphere, or specific vocation by the measurement of present performance. Frequently, an achievement test in a subject matter field is used in such prediction since it has been found that achievement at a given level is often one of the best indicators of future success at higher levels, and thus it becomes a measure of an individual's aptitude for it. For example, one of the best measures of aptitude for mathematics is present achievement in mathematics. In such instances the more fundamental components have not been sufficiently isolated, analyzed, and solidified in a measure of the underlying aptitudes. Rather, subject matter mastery is taken as an indicator of these underlying aptitudes. Thus achievement tests are used as measures of aptitudes. They are valuable tools to the vocational guidance counselor in that he can use the degree to which an individual successfully completes or masters certain school subjects, demonstrated by achievement test scores, as predictors of future success in the same or similar subject matter fields which are pertinent to the future vocational possibility.

Trade tests are designed to measure the amount of a person's information about a trade, or to measure his skill in the performance of tasks drawn from that trade. They have, on occasion, been used for the prediction of future proficiency and consequently are, therefore, being used as aptitude tests. Their closest counterparts in tests expressly designed as measures of aptitude are certain mechanical aptitude tests such as the *O'Rourke Mechanical Aptitude Test* and the *Stenquist Mechanical Aptitude Test.* The tests just mentioned include many items calling for familiarity with tools and mechanical contrivances, although they are not as specific to a given occupation as are the items in a trade test.

Achievement and trade tests, when used as measures of aptitude, have the weakness of not controlling the effects of differential educative influences. It is difficult to interpret the effect of differing amounts of instruction upon achievement test scores. Indeed, it was for this reason that it became necessary for the Association of American Medical Colleges to drop from their *Aptitude Test for Medical Students* the section on pre-medical information. It should not be inferred that all tests specifically constructed for the measurement of aptitude control this effect entirely, for such is not the case. Undoubtedly, certain of these tests are little influenced even by extended practice. Nevertheless, even such a highly regarded test as the *Minnesota Mechanical Assembly Test* is less reliable with adults than with boys because previous familiarity with mechanical contrivances affects the scores obtained. When compared with achievement tests, aptitude tests in general are much less affected by differential educational influences although still showing them to some extent.

Aptitude tests and intelligence tests have many points of similarity; both are used for predictive purposes; both directly measure present ability rather than the inferred native capacity; both contain learned material which the test constructors select as being relatively unaffected by practice or differential educational influences. Aptitude tests and intelligence tests are distinguished by the scope of the activities predicted. Aptitude tests are concerned with a particular activity or group of activities while intelligence tests are concerned with larger segments of behavior. An intelligence test may be considered as a general aptitude test while the tests discussed in this article are special aptitude tests. Certain intelligence tests are referred to as scholastic aptitude tests. This method of designation coincides with the findings. To be sure, special aptitude tests may predict more efficiently for a specific school subject, but intelligence tests are the best single test indicator of scholastic aptitude in general. Intelligence tests are more valuable when a general measure of prediction is indicated but of less value when specificness is desired.

Certain physical capacities of the organism such as visual acuity, color vision, motor coordination, and physical strength are used in aptitude testing procedures because they too are prognostic of future success. These capacities are either measured by individual tests of the particular functions, or they are measured by material incorporated into an aptitude test. Certain measures included in musical aptitude tests, such as pitch discrimination, exemplify the latter category of aptitude measures.

History. Aptitude testing as we now conceive it is a relatively recent phenomenon. In 1910 *The Manual of Physical and Mental Tests* written by Guy M. Whipple appeared. This volume presented information about the most important tests then in use and was the standard reference of the day. It included reference to but one single measure that in any respect could be considered an aptitude test. This consisted merely of a passing incidental mention of Seashore's work on pitch discrimination which was his pioneer study in musical ability. The word "aptitude" does not appear in the index. The whole approach that now exists in the field of aptitude testing was foreign to this publication which classified the measures included as tests of attention and perception, learning and memory, imagination and invention, and the like.

During the decade 1910–1920 the groundwork for the present approach was being laid. In psychological testing the "structural" approach no longer completely dominated the field. Munsterberg in 1913 was engaged in the problem of the selection of street car motormen and telephone operators by using various memory, attention, and observation tests as well as tasks simulating the work to be performed. Seashore was working on the problem of musical aptitude culminating in his publication of *The Psychology of Musical Talent* in 1919. An early mechanical aptitude test developed by Stenquist was used in the Army in 1918. As might be surmised, the greatest single impetus for all psychological testing, including aptitude testing, came from the first World War.

It was the decade 1920–1930 which saw tremendous strides in the development of aptitude tests. Most of the tests described in the appendix to Bingham's *Aptitudes and Aptitude Testing* appeared during this ten year period. Using the tests described by Bingham as illustrative, the following dates of publication are to be found: The *Stenquist Mechanical Aptitude Tests* were first fully described in 1923 as was the first form of the *I E R Mechanical Test for Girls.* O'Connor's *Finger Dexterity Test* first appeared in 1926 and his *Wiggley Blocks* in 1927. The *Meier-Seashore Art Judgment Test* was described in 1926 and the *McAdory Art Test* in 1929. The various *Minnesota Mechanical Ability Tests* were first fully described in 1930. In this year the *Stanford Scientific Aptitude Test* also appeared.

The present period extending from 1930 has seen steady growth in the development of many other tests, but the most significant features have been the application of these tests in varied situations and the refinement of their usage together with an appreciation of their proper place in guidance, school, and employment practices.

The second World War has produced many interesting advances in aptitude testing. Early in their training all men in the Armed Forces are submitted to a variety of psychological tests. Since the problem of selection of men for specialized training is a gigantic one, both in the Army and Navy, a great variety of aptitude tests have been developed. On cessation of hostilities, when these tests are released for civilian use, guidance workers will have a greatly enriched store of counselling tools.

Present Status. Although we have made considerable strides toward arriving at an array of tests suitable for the measurement of special aptitudes, it must be admitted that we are still far from the day when a vocational guidance bureau can submit an individual to a battery of tests which will remorselessly grind forth a pattern of his basic aptitudes. Indeed, we have not reached that state in regard to tests specific to a given vocation. We have many tests but the total number is very small in comparison to the number of occupations found in our society. Progress in the development of new tests and in the exploration of the vocational prognostic value of those already developed is, of necessity, slow.

It is quite possible that such a test combination never will be achieved since occupational success requires not merely the possession of special aptitudes in certain amounts, but also the coordination of these aptitudes. Thus, a watchmaker at his bench, a surgeon at the operating table, and a college professor on the lecture platform are persons, integrated individuals who are behaving as such, and not animated sums of isolated aptitudes. In so far as aptitudes enter the picture, they do so in a coordinated unified fashion specific to the individual. He may or may not be skillful in the use of the aptitudes he possesses, and he may or may not demonstrate sufficient motivation to use them in the competitive situation that training for and practice in a vocation entails. We are making progress toward solution of the problem of isolation of the aptitudes requisite for occupational success, but always we shall be dealing with an individual unique unto himself.

It has been observed that aptitude tests predict proficiency in the study of a given field within an educational institution much more efficiently than they predict success in the actual trade or profession. Without meaning to cast special aspersion on the tests in the field mentioned, it is more justifiable to speak not of a legal aptitude test, but of a law student's aptitude test. The value of an aptitude test in measuring the probabilities of success within the school situation is by no means an inconsiderable contribution to vocational guidance, and because in most instances it does not do the task of adequate prediction in the vastly more complicated on-the-job situation, a limitation of its value appears. However, this is not necessarily an intrinsic weakness of the test itself.

One of the more disconcerting features to the vocational guidance worker about the present status of aptitude testing is the realization that more success so far has been achieved in the use of aptitude tests in the selection of workers in employment procedures than has been accomplished in aiding individuals to select vocations. This, at least in part, is due to the comparative simplicity of the employment as compared to the guidance problem. It is much easier to answer the question, "Is this man suitable for employment in such and such a job?" than it is to solve the issue, "For what type of job is this individual eminently suitable?"

Contrary to an unfortunately rather common opinion, aptitude tests are by no means objective devices requiring no particular skill in selection, administration, scoring, or interpretation. Since their use is not free from human error and limitation, one must be adequately prepared both in theoretical training and in practical application before these tools can be used properly. Aptitude test scores in themselves are meaningless; the crucial issue is their proper interpretation as one facet of the data used in vocational guidance.

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R. I. W.

APTITUDE TESTS, CONSTRUCTION OF. An aptitude test may be defined as a test useful in forecasting succes sof individuals in some endeavor. This definition is stated in functional rather than descriptive terms, and necessarily so, since many different types of tests may functionally be aptitude tests. Achievement tests, for example, may become aptitude tests if used for forecasting behavior. However, there are some differences in the construction of tests specifically designed to be used as aptitude tests and in the construction of achievement, attitude, and other types of tests. The following discussion is limited largely to the construction of tests designed to be used as aptitude tests. This limitation is definitely not to be construed as limiting the field of aptitude testing.

General Principles for the Construction of Aptitude Tests

1. *The primary importance of an aptitude test lies in its efficiency to do a specific job—that of forecasting success in an activity.* Aptitude tests or test items are not limited in their content, in the type of questions asked, or in the kind of performance called for. It is true that these factors do actually influence the kind of test that may be produced in a specific situation. Although in many cases they may not influence the test adversely, sometimes they may cut down the possible ceiling of efficiency. For example, the restriction of an aptitude test to the use of paper and pencil may be a serious handicap for testing motor-coordination, but it is no handicap at all in testing for aptitude in mathematics.

2. *Aptitude test items should represent as closely as possible the activity for which the test score is to forecast success.* The reason for this is obvious—it tends to increase the validity of the test. In fact, if the activity itself can be tried out—through setting up apparatus through which the actual testing in the activity is made possible—the highest validity may be obtained. A word of caution must, however, be mentioned at this point. Prognostic activities which resemble criterion activities may have but a surface resemblance and may not result in a high validity. The term "surface validity" has been applied to this type of situation. This "surface validity" is sometimes an aid in selling the test to personnel workers, but it is not necessarily an indication of the real validity of the test.

3. *Aptitude tests should be as objective as possible, economical of testing time, and easy to administer and score.*

4. *A test battery composed of different tests is often better than one test.* Frequently the activity in which success is to be forecast is composed of several different identifiable aspects. In these cases it is well to construct tests measuring the different aspects of the criterion to be predicted.

The development of good aptitude tests consists of the application of these four principles both in the construction of the original items and in judging the results of statistical work with test items and tests.

Development of Aptitude Test Items

School Subjects and Curriculums

For prediction on the high school level the material in the different subjects should be examined. Foreign languages, English, and social studies are largely verbal and the work involves reasoning with and memory of concepts presented mainly in verbal form. Items for these subjects should therefore be in verbal form and present situations requiring thinking in content like that of the subjects. For foreign languages, a miniature vocabulary and grammar of a foreign language may be set up, the student being asked to translate material into such foreign language or from such foreign language. In English, familiarity with language usage or current books and plays may be tested. In social studies, test items on the interpretation of maps and graphs may be set up. Aptitude for reasoning in the social studies may be tested by setting up appropriate reading material with test items made thereon which test reasoning ability with that type of material. The Iowa General Education Development tests are good examples of this latter type of test construction.

For mathematics aptitude, tests can be set up for any level of prognosis by using an appropriate level of manipulation of numbers and formulas. Similarly for science, problems involving reasoning at different levels can be set up. The picturization of scientific principles has been found to be useful in aptitude testing for engineering.

Specific Occupations

For occupational testing the best procedure is to set up the job, or some important part of it, in miniature. For example, to test for a street car motorman a situation may be set where the person tested must make a series of decisions and reactions similar, at least in part, to those which a motorman must make. In some cases the situation may be reduced to a paper and pencil test. For example, in the selection of inspectors for a pencil manufacturing concern Drake devised a test involving the identification, among a series of circles with dots in the center, of those circles in which the dots were off center. Where the job situation can be translated into a paper and pencil test this is preferable because of the flexibility in administering the examination and economy in time and materials. In such translations into paper and pencil tests there is, of course, the possibility of a reduction in the validity of the test.

Interests and Mental and Physical Traits

A somewhat different type of test used for prognosis is that in which the items are related to the behavior to be forecast through testing the same general type of trait or interests. This class of prognosis tests is unique in that the same test or tests can be used for guidance in many different subjects or occupations to a greater extent than the type of items discussed above. This category of items will be broken down for descriptive purposes to interest test items and to mental or physical trait items.

Interest test items have been found to be prognostic of success in many different subjects and occupations. The validity of interest tests is not so high generally as that of other prognostic tests. An interest item is intended to reveal the liking or disliking for various types of activities, persons, situations, etc. For example, the test item:

"Would you like to construct aeroplane models?" would be made up to be answered in these different ways: Yes.... No....?.... By methods developed by Kelley and Strong the weight of any of these three answers for forecasting success in different subjects and occupations may be established.

The Kuder Preference Record uses a paired-comparison form, calling for the student to choose which of two described activities he would ordinarily prefer. This method appears to have promise. Paper and pencil tests of mechanical aptitude are essentially interest tests in a special field.

Individual tests of mental or physical traits, or batteries of such tests, have been found to have a relationship with success in certain college curriculums and in various occupations in the War Department and Navy Department. The traits found to be of most value are: (1) Verbal ability, which may be tested by vocabulary and reading tests; (2) Language usage, or ability to speak and write correctly, although related to verbal ability, this is considered by some to be a separate trait. (3) Arithmetic computation, or ability to manipulate numbers; (4) Arithmetic reasoning, or ability to reason mathematically; (5) Spatial relationship, which may be tested with flat or two-dimensional figures or with three-dimensional figures; (6) Mechanical reasoning—a less certain trait than the foregoing—which may be tested with various types of mechanical comprehension items; (7) Speed of perception—a trait the independence of which is not too well established—which may be tested by any type of cancellation, alphabetizing, name comparisons, etc.; (8) Motor coordination—while the research in this field does not aid much in distinguishing sub motor-coordination traits, it is felt that for many occupational purposes a hand motor coordination is the best all-round test. The Minnesota Rate of Manipulation test is a good example of this.

STATISTICAL PRINCIPLES

The Coefficient of Correlation

Statistically one of the main problems in constructing aptitude tests is to produce tests with as high a validity as possible. An index of validity may be obtained for each item in a test, or for a test as a whole, or for a battery of tests. The index of validity is an index of the relationship between the way test items are answered, or the scores on a test or a test battery and some measure of the individual in the task, the aptitude for which the test is designed to predict.

The most used index is some form of a correlation index, the most common form being the Pearson product moment coefficient of correlation. The Pearson coefficient may be used when there is a series of scores in the prognostic test or tests and in the criterion measure.

The most common form of this is that for grouped data which is as follows:

$$r_{xy} = \frac{\Sigma_{xy} - \left(\frac{x}{n}\right)\left(\frac{y}{n}\right)}{\sqrt{\frac{x^2}{n} - \left(\frac{x}{n}\right)^2}\ \sqrt{\frac{y^2}{n} - \left(\frac{y}{n}\right)^2}}$$

This coefficient assumes linear correlation, i.e., normal distribution of the scores of the predictive measure and of the criterion measure. This coefficient represents the minimum correlation of relationship between the two measures. If the relationship is truly curvilinear it actually underestimates the relationship. If the data appear to be non-rectilinear in nature the correlation ratio eta (η) should be applied. In some cases the relationship may be further understood by examining the scatter diagrams of the cases which have been obtained by plotting the scores of the prognosis test as one variable and the criterion scores as the other variable.

Percentage of Difficulty of Items

The percentage of difficulty of the items in each test should be carefully studied. It has been found that test items with a difficulty of about 50 percent, that is, items which are answered correctly by 50 percent of the group, are most valid. A table of the percentage of difficulty provides a basis for eliminating too easy, too difficult, and ambiguous items, and thus increasing the value of the test per unit of time. Obviously test items which have 100 percent difficulty and 0 percent difficulty have no value for the test. Other items of high or low difficulty may be eliminated with profit. In general, the closer the items fall into a normal distribution around 50 percent difficulty, the better the resulting test.

Validation of Individual Items

There is a question as to whether or not it is important to validate individual test items. The answer depends partly on the type of material. If the aptitude test items are all alike essentially, as in a clerical aptitude alphabetical test, there would be no point in making such calculations. If the test items differ more or less among themselves it may pay to calculate the validity of individual test items. Validation methods for test items may be classified as external or internal. The external methods are best exemplified by bi-serial r through which the correlation between the answers on each test item is related to the criterion measure. The internal method is exemplified best by the method which uses the highest and lowest 27 percent of the persons on the total test score and by examining each item of the test, finding (a) the percentage of the high persons passing an item (b) the percentage of low persons passing that item, and then subtracting (b) from (a). The greater the difference the greater the validity of the item. Long and Sandiford have the best description of the various methods.

Correlation Coefficients When a Test Battery is Being Constructed

If the aptitude test to be developed is a battery of tests, each test should be correlated with the criterion in the way described above. The intercorrelations between the tests should be obtained. The worthwhileness of the individual tests can be determined largely from these two sets of correlations, the general guiding principles being that those tests should be retained in the battery which have the highest validity coefficients and the lowest intercorrelations with the other tests of the battery.

If the total score of the battery is to be used its validity as a whole may be obtained. However, if a total score is to be used there is a problem of equalizing the scores on each test and deciding what weights to use on such equalized scores. The multiple regression equation gives the best predictive combination of scores and the multiple R is the measure of its validity.

Correction for Attenuation in the Criterion Measure

There are two important points in estimating the validity of a test which have not been generally recognized. Since in most predictive situations we are interested in the "true" criterion measure, validity coefficients in general should be corrected for attenuation in the criterion according to the formula

$$r_1 \propto = \frac{r_{10}}{\sqrt{r_{00}}}$$

Further the index to use to find the percentage of efficiency of the test is

$$E_1 \propto = \frac{1 - \sqrt{r_{00} - r^2_{01}}}{\sqrt{1 + r_{00}}}$$

Sampling Error

The sampling error problem in correlational statistics using human traits and performance is beset with considerable difficulty because of the variability of different groups of persons in regard to traits and relationship between them. If one test is found to predict performance with a certain efficiency in one group of persons it does not mean that the test will predict with the same efficiency in other groups. This is because most groups used for validating tests are artificial groups created by various environmental influences and are not usually a good representation of the universe for the relationship involved. Further if several tests are involved this matter is complicated through the fact that the intercorrelations are also affected through using a biased group and the resulting regression equation may contain the accumulations of biases and therefore be a poor representation of the truth. With school populations this is not quite so difficult a problem because the school provides a certain uniformity of environment and also because sampling from various school systems is done with comparative ease. In occupational aptitude testing it is more important to try out tests on new groups to see if the validity is as high as it was for the group on which the test was standardized. This is true in general even for specific employment tests.

Factor Analysis

Factor analysis may be used to aid in determining somewhat better than from the table of intercorrelations alone which tests in a battery should be retained. Factor analysis is of most value in getting at factors or traits important in a large number of tests for prognosis in a large educational or occupational area. It has not been found so valuable for determining traits in narrower areas. For example, factor analysis with groups of mechanical aptitude tests or motor-coordination tests have not established very definitely the sub-traits in these respective areas. Factor analysis in effect makes possible a better interpretation of the table of intercorrelations. It has not established any set of mental traits which are primary or fundamental for all mental activity. The traits that have been found vary more or less with the set of tests with which any specific study is begun. It should be pointed out that factor analysis in and of itself does not establish the validity of tests used for prognosis. This can only be done by relating the test scores to a criterion measure. Eventually it may be possible through finding "primary" or "fundamental" traits both in tests and in the behavior of individuals to dispense with our present methods of establishing validity.

Criterion Measures

The criterion measure represents the educational or occupational behavior being forecast and if this measure is an erroneous or a poor one, no matter how high the validity coefficient may be, raw or corrected, it will not represent good prognostic work. In schools and colleges, marks in courses, in examinations, products made, and ratings of any objective performance carried on may be used as criterion measures. If an objective examination for a course can be agreed upon by instructors to represent success in a course, it will be a better measure to use than the marks of the instructors. If instructors' marks are to be used this measure can be improved considerably if (1) the marks are given in a sufficient number of steps to enable discrimination between achievement in students, and (2) if teachers use objective measures to aid in determining marks.

Other criterion measures which may be used with prognostic tests in education are results on other aptitude tests—either tests which measure the same traits or tests which do not measure such traits. In the first case high positive correlations would be advantageous and in the second case low or zero correlations would aid in analyzing the validity of the test.

For tests in occupational fields there are various measures which have been used as criterion measures. Among these are: (1) Workers classified as to their standing in their occupations as, for example, machinists might be classified as (a) first class machinists, (b) semi-skilled machinists or mechanics, (c) bench workers or operators of simple machines, (d) unskilled workers, (e) without ability with tools; (2) workers rated by superiors as good, average, poor, etc.; (In rating workers the more specific the directions for rating can be made the better the rating.) (3) the number of years in the occupation; (4) the salary paid to workers; (5) the amount of work produced; (Care must be taken in this case to get a justifiable sample of the work. The U. S. Employment Service in its Worker Analysis Section has spent considerable time in developing criterion measures of work. For department store salesmen, for example, the following were used as possible criterion measures: Number of sales, average per sale, actual credits, total credits, total net sales, daily sales quota, days' selling, actual quota, bonus, extra selling cost and cost per cent); (6) errors on the job, when the flow of work is uniform and the only variation in performance is in the errors, such as in inspection jobs; (7) work sample, which is developed from a job analysis and is a performance as near as can be made of the process (A good work sample itself may become an aptitude test.); (8) ratings made in a training course on the length of time required to finish the course.

The decision as to what criterion measure or combination of criterion measures should be used should depend upon both the criteria which are considered by job specialists to be the most important and the validity found for each criterion measure or various combinations of criterion measures.

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D. S.

APTITUDE TESTS, GENERAL

Cleeton-Mason Vocational Aptitude Examination—Type E-A. This examination constructed by Glen U. Cleeton, Professor of Industrial Psychology, and Director of the Division of Humanistic and Social Studies, and Charles W. Mason, Assistant Professor of Psychology, Carnegie Institute of Technology, is a battery of tests for determining four types of aptitude: (1) general executive aptitude, (2) sales aptitude, (3) engineering, research, and technical aptitude, (4) accounting aptitude. The examination may be used with high school graduates, but is best suited to persons who have completed at least two years of college work.

In addition to a diagnostic personal information questionnaire, the examination contains eight subtests as follows:

Test 1. General Information—50 items
Test 2. Arithmetical Reasoning—30 items
Test 3. Judgment in Estimating—30 items
Test 4. Symbolic Relationships—20 items
Test 5. Reading Comprehension—25 items
Test 6. Vocabulary—45 items
Test 7. Interest Inventory—100 items
Test 8. Typical Reaction Inventory—80 items

The examination is adapted to group administration. Scores may be used for counseling individuals on the choice of a general field of occupational activity or for selection and promotion purposes in industry. Tables for interpreting scores are provided in percentile form for each subtest. Instructions are provided for establishing score patterns for the four aptitudes which the examination purports to measure.

The examination was standardized on industrial and business employees and college students with groups of approximately 500 each. Validity was determined by comparison with ratings of college students by instructors and employment counselors, and by occupational classification and comparison of industrial and business employees.

Standard deviations for the several subtests range from 9.6 to 21.9. Reliability coefficients of the several subtests range from .749 to .864. The reliability coefficient for combined scores on subtests one to six, inclusive, which are the more objective parts of the examination, is .941. The reliability coefficient of the interest section is .796, and for the typical reactions section it is .792.

The examination is distributed by McKnight and McKnight, 109-111 W. Market St., Bloomington, Illinois.

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G. U. C.

IOWA PLACEMENT EXAMINATIONS. The Iowa Placement Examinations, first published in 1924, are particularly designed for use with individuals interested in attending college. They include aptitude tests for measuring factors which contribute to subsequent success in chemistry, English, foreign language, mathematics, and physics. No previous training in the subjects is required. Included in the set is a training series which purports to measure previous training and assumes one year of high school or one semester of college training in chemistry, English, French, Spanish, mathematics, and physics. At least two forms are available for all tests.

A 1930 revision was followed by Form M in 1941 which is in quick-scoring form. The number of tests were cut from eleven to five to include: Chemistry Aptitude, English Training, Foreign Language Aptitude, Mathematics Aptitude, and Physics Aptitude. The advantages of the quick-scoring edition are:

(1) Weak items included in earlier forms are eliminated.
(2) The number of items in each test has been increased in order to provide more adequate samplings of the subject matter in important areas.
(3) The mechanics of administering and scoring have been simplified and speeded up.
(4) Tests may be scored by an IBM Scoring Machine.

Although the number of items has been increased in each test, the time for administering has not been increased more than five minutes on any test except for the Mathematics Aptitude which has an increase of thirty minutes over the original form. Testing time for the English and Foreign Language Tests is 45 minutes each, for the Chemistry Test 47 minutes, for the Physics Test 50 minutes, and for the Mathematics Test 75 minutes.

Validity of the original forms has been demonstrated again in the new edition. Correlations of scores with first semester grades range from .50 to .72. The number of students tested range from 150 to 324.

Reliability estimates ranging from .915 to .979 have been based upon 800 college and university freshmen. The Kuder-Richardson "foot-rule" and Spearman-Brown formulae were used.

Directions for administering and taking Form M are printed on the front page of the test booklets. Percentile scores corresponding to total raw scores made by relatively large populations of college freshmen are available. Separate norms for Liberal Arts and Engineering College groups are given for the Mathematics and Physics Tests.

The value of the Iowa Placement Examinations, Form M, in vocational advisement is indicated in:

(1) Their affording a basis for prediction of success in college.
(2) Their indicating strength or weakness in the areas tested.
(3) Their providing objective data for the adviser to use as evidence for or against an expressed vocational desire on the part of the student.

With the exception of the Foreign Language Test, which is in Esperanto, these tests show some degree of relationship to the Cooperative Tests in corresponding subjects.

The publisher of the Iowa Placement Examinations is the Bureau of Educational Research and Service Extension Division, State University of Iowa, Iowa City, Iowa.

La V. H. R.

ARCHITECTURE, APTITUDE FOR THE PROFESSION OF.

Opportunities in architecture vary with the degree of energy, talent, and enthusiasm of the individual. Highly intelligent, well balanced, yet imaginative people are needed as well as professional enthusiasm and the desire for achievement. Aptitude for hard work, the ability to visualize readily, and a talent for being able to portray clearly one's thoughts, both orally and graphically are fundamental to the potential architect.

Many kinds of abilities are needed. Architecture is a profession including design of planning, construction, and architectural engineering. General practice divides into the areas of design (basic studies, show drawings), construction, or working drawings, details, shop drawings, specification writing, supervision, and the keeping of records. Architecture is a planning profession and many aspects of city, community and regional planning are an integral part of architecture, the difference between them being that the practice of architecture as we have conceived it in the past has to do with the design of buildings, whereas, planning today has to do with neighborhoods, communities, cities and regions.

The profession, through the building industry, will and must furnish a large reservoir for post-war employment and reconversion of manpower. Housing, planning, public works, and private construction must have competent architects, planners, and engineers to create the instruments of service, superintend the construction, and follow these programs through to completion.

The several progressive responsibilities usually are (a) Office Boy, (b) Tracer and Letterer, (c) Junior Draftsman, (d) Senior Draftsman, (3) Chief Draftsman, (f) Designer, (g) Chief Designer, (h) Firm Member or Partner, (i) Consultant or Specialist.

Aptitudes can best be described by telling how the architect is trained and what he does.

Generally, the education of the prospective professional student in the preparatory or high school should include the broad culture inherent in a fundamental knowledge of history, the sciences, mathematics, and language. Most architectural schools prefer that this basic education should not attempt to specialize in architecture but should furnish the working tools that can later be sharpened in a professional school.

Specialization, it is generally agreed in the profession, should not begin before the college level. It would be helpful for the secondary school student to have special lectures on the understanding and the appreciation of architecture as a profession but it is much better to strengthen the broad understanding and background study rather than to begin specialized professional courses without that background. Drawing and other courses at the high school level often prevent the student from getting this background and furnish the student only with a skill which he can quickly acquire in a very short time in a good school of architecture.

The beginner may get his start by going to a good professional school of architecture, a list of which may be had by writing Professor Paul Weigel, secretary of the Association of Collegiate Schools of Architecture, Kansas State College, Manhattan, Kansas. Any good school will usually require a five-year plan for undergraduate study. After this undergraduate study, he should then complete graduate study and possibly do some foreign travel as conditions permit.

A generation ago many draftsmen served apprenticeships in offices and became architects in this manner. By current educational standards there is an increasing need for a broad education as well as for professional training which tends to discourage those who do not have the advantage of the training they receive in a good school.

Experience in good offices is very essential during undergraduate days and for several years after graduation. An undergraduate course of study of five or more years, one or more years of graduate study, and then some three to five years of excellent office training and experience are essential before the individual can be properly called an architect. This varies very much with the individual, of course, but is generally true.

Beginners in the profession usually start at tracing and lettering. As they become proficient they become draftsmen and ultimately designers or other specialists. Draftsmen are of several kinds, ranging from the mechanical draftsman in the engineering phases of the profession to the designer in the more creative side of the profession.

Working conditions vary from office to office. Some offices are now air-conditioned and are very pleasantly lighted both for summer and winter usage. The drafting rooms of offices are usually favored with north lighting and are selected with particular care so as to provide the office force the best of working conditions. It is possible to work indoors in the office or to work outdoors on the actual construction job. Outdoor work, which includes supervision of construction, superintendency and other similar work types, offers working conditions depending on the local climate, some being very pleasant and favorable, and others being quite severe.

Contacts in the profession are varied to a high degree and are quite interesting, provided the individual is able to go beyond the usual routine drafting of the beginning draftsman. The draftsmen usually have contacts with each other and with certain of the specialists who are constantly present in the average office. Members of the firm have broad contacts with clients, service organizations, public officials and others depending upon their degree of establishment and their effectiveness in the community. The on-the-job workers have very personal human relations with labor and management in a very realistic and down-to-earth sort of way.

The personal qualities required for the profession are varied and important. The creative people must have those qualities of leadership, imagination, and inspiration so necessary for original production. The mechanical and scientific people may seem more stolid and perhaps somewhat less imaginative (perhaps less temperamental), but quite thorough and painstaking. The successful practitioner must have all the personal abilities of a good business man. The construction industry feels that those who deal with them must have all the attributes of winning and holding the personal esteem of labor under the most trying circumstances at times.

Responsibilities are varied and many. The draftsman is responsible for his knowledge and skill which passes on up to the chief draftsman who is responsible for the production of his drafting room. From the chief draftsman the responsibilities are passed on to the firm members and on out to the field through their superintendents, all of whom are agents for the owner. The architect accepts the responsibility for the other professions whose services he coordinates unless exceptions are especially set forth beforehand.

Special Skills

For the architects, special skills in design and creative thinking are necessary. Being a good draftsman is not enough. He must be able to convert his ideas into documents of drawing, contracts, and finished works. In contrast to these imaginative and creative skills, the architectural engineer must be particularly able in the exact sciences, mathematics, and mechanics so as to be able to create the architectural engineering of buildings.

Some have failed because they have misinterpreted or misused their own abilities. Elaborate testing is important to discover these talents mentioned previously. If one is skilled in the engineering area, he may find an attending weakness in the creative design area. Many have failed in design when they have had far greater talents in engineering or the scientific fields. Others have failed because they could not do extensive work indoors. Some have failed in supervision and field work because they were too introvertic to succeed at tasks requiring extensive extrovertic skills.

Architects have proved during the war period to be most versatile and able. They have done many assignments—from the professional areas of building to selling, personnel work and teaching. They have been able to adapt themselves readily to new needs because of the breadth and imagination of their training and creative experience.

Because they have vision, they quickly engross the detail to get on with the overall problem and plan. Many are being sought as public relations officers because they have the "lift", imagination and resourcefulness required of such people.

Many architects are also sculptors, printers, writers, musicians—and use at least one other art as a hobby—often with distinction. Such people are culturally valuable and opportunities for them are varied and interesting.

Professional advancement comes to those in the office who are most valuable in the production of the ideas and documents of the profession. Most of the progress that is made in the office and on the job in the early days of the experiences of the beginner is accomplished by merit and contribution. Firm members receive a great number of commissions through their friends, through public good will and through being known by the works they have done, the public services they have rendered and by their own good reputations. Public lectures are an essential part of the public service of the architect.

Before deciding upon this profession the individual should measure his own professional interests through extensive psychological aptitudes and interest tests. These should be interpreted by competent guidance people. If there is a clear indication of talent, he should then spend a considerable time in studying what architects, architectural engineers, and planners do in their professions. After aptitudes are discovered and the area of professional interest determined, then a sound education should be completed and be followed by the substantial period in a good office.

Planning a Professional Career

The professional training of the architect, the architectural engineer and engineer and the planner requires a very carefully worked out program in each case. There is some variety in the offerings of the schools at the college level in the United States but the fundamentals are essentially the same. There must be a good background in mathematics and science which leads up through construction and related fields. The students must receive many years of creative design which should be clearly related to a well integrated study of history as it relates to the contemporary scene. Some schools require a foreign language, but all require an ability in the basic use of our own, which is essential in practice. Every oral or written discussion in the modern office is conveyed by writing, drawing, or sketches.

W. R. R.

ARMY. Vocational guidance in the Army has been basically of two types, preparing men for the jobs they had to do as soldiers and preparing them for their return to civilian life. After the war ended, the latter activity surpassed the former in intensity as indicated by the large number of men processed through Army Separation Centers when compared with the smaller number of new men going through Reception Centers.

At the Separation Centers the best-trained guidance personnel has been on duty, chosen for their assignments on the basis of their civilian experience and education. Most of this personnel has the additional advantage of training at the Adjutant General's Vocational Counseling School. Each man going through an Army Separation Center has a Form 100 (Separation Qualification Record) filled out, summarizing both his civilian and military background, and although no dischargee is required to get further guidance, such help is available through the counselors on duty. These men have available vocational information of government agencies, industry, labor and community groups, and can inform soldiers being discharged on subjects such as occupational requirements, relationships of military and civilian jobs, and rights and benefits of veterans.

Each soldier being processed through a Separation Center receives a copy of the pamphlet entitled "Information for Soldiers Going Back to Civilian Life" and has access to representatives of the Veterans Administration, United States Employment Service, and Red Cross who are on duty at the Separation Centers. The Army helps the man up to and through the Separation Center, but then his problems become the responsibility of civilian organizations set up to handle them. The limitation on time and mental receptiveness of dischargees restricts the value of vocational guidance at Army Separation Centers; when the pressure is applied to hurry men through and when the men themselves are thinking primarily and excitedly about getting home, most of the information available to them will not be absorbed or appreciated, no matter how efficient the personnel is that is presenting it.

During a soldier's military career he has an opportunity to read and study numerous materials which will help him after his discharge. Among them is the education manual, *Your Post-War Career,* which was prepared as a textbook for use in the Army Education Program overseas. It answers questions most often asked by soldiers regarding civilian jobs, and serves as their introduction to the post-war job scene. The book attempts to ease the readjustment to civilian life by mentioning facilities available in the job hunt, giving specific information on occupational fields such as government jobs and a business of one's own, and pointing out further sources of information. It assists the individual in analyzing his own abilities and attitudes in order to determine what vocations or training he is best suited to undertake.

The eight chapters in *Your Post-War Career* are: Looking Forward; Your Job Prospects; Choosing Your Line of Work; Starting Your Own Business; Government Jobs; Should You Go Back to School?; Your Job Training in the Army; Where Do You Stand Now?

An abridged version of *Your Post-War Career,* entitled *What About a Job?* was prepared, issued as a joint Army-Navy publication, and distributed on a more widespread basis.

The Army is also using and distributing to Army libraries, educational officers and troops a series of pocket-size Occupational Briefs prepared under the direction of the War Department by governmental agencies such as the Bureau of Labor Statistics, War Manpower Commission and Department of Agriculture. They each include discussions of the occupation itself, qualifications it requires, earnings, outlook, preparation and related jobs. More than one hundred professional, skilled, agricultural, clerical and sales fields are covered.

One of the most widely used vocational guidance devices is the Army Vocational Information Kit which contains information on three hundred occupations and consists of more than four hundred pamphlets and a series of books. The Kits were compiled by Science Research Associates on the basis of advice from vocational guidance experts. Although the primary purpose of the Kits was in connection with the Army Education Program overseas, they were also distributed to Army Separation Centers, hospitals and other central locations where the information was in demand. 10,000 Kits were delivered in the Zone of Interior and overseas.

In addition to the occupational information in the Vocational Information Kits, it was necessary to have a guide which could be used for educational advising in the Army Education Program overseas; the Army therefore developed the Educational Advisory Manual to help individuals select courses. An index of selected occupations and related Army Education Program courses is provided in the Manual; the user is warned of the danger of too mechanical a use of the index. A device is provided in the manual which helps the advisor suggest to the soldier, who does not know what he wants to do, a number of occupations that are related to the soldier's combined interests.

Three sound films were also made to provide guidance in connection with the Army Education Program. "Follow Me Again" and "Opportunity Knocks Again" are directly related to the education program, stimulating interest and confidence in it and showing the advantages from the soldier's point of view and in his language; each is about fifteen minutes long. "Your Next Job" explains the importance and means of selecting and preparing for the right kind of job, showing by an ingenious use of double exposure in the case of one soldier how such hints may be practically applied. It runs for twenty-two minutes.

To answer questions of the men regarding the continuation of their civilian education while in the service and following their discharge, the Army prepared War Department Pamphlet No. 21–27, "How About Your Education?" Answers to other questions plus provocation of discussions were provided by a series of pamphlets used in soldier roundtable discussions; most pamphlets in the series were aimed at the post-war period and some were related to specific civilian jobs and educational problems of the individual soldier. Examples are: "What Has Alaska to Offer Postwar Pioneers?" "Will There Be Work for All?", "What Will Your Town Be Like?", "Shall I Go Back to School?", "Shall I Take Up Farming?", "Does It Pay to Borrow?".

While those materials were used in off-duty discussion periods, the Army also had a weekly orientation hour on duty time which soldiers were required to attend. Before VJ-Day the materials used during the orientation hours were devoted to subjects directly related to the war, its objectives and progress. After the defeat of Japan the series of "Army Talk" consisted primarily of problems of the civilian life soon to be entered by the majority of soldiers. Some titles of the weekly "Army Talk" used during the post-war period were: "Will There Be Jobs?", "What Kind of Job Are You Best Fitted For?", "How Does Reconversion Affect You?", "Your Rights and Benefits as a Veteran", "How About a Business of Your Own?", "Wage Earning as a Career", "Where Will the Good Jobs Be?"

Closely tied in with "Army Talk" after August, 1945 was "Newsmap," the large weekly poster in color which had been used previously to show progress of the war. After the war's end the back of "Newsmap" frequently was used for guidance purposes; an example is the one of 8 October 1945, with the heading "What Job Are You Best Fitted For?"

Supplementing the specific guidance materials already mentioned were articles about jobs and related information released in Army publications such as Yank, Stars and Stripes, Tomorrow and hundreds of camp newspapers, especially after the defeat of Japan. Titles of some Yank articles were: "Aviation Jobs," "The Bridge-port Plan," "Getting Your Old Job Back—or a New One," "Services Available for Discharged Veterans in New York City."

Information regarding the post-war plans of soldiers was included in the printed results of surveys conducted by the Research Branch of the Army's Information and Education Division. These reports provided background data for those performing guidance duties in Army Separation Centers and in connection with the Army Education Program, but care had to be exercised not to generalize on the basis of such materials in counselling an individual soldier. This series on post-war plans included: "Post-War Migration Plans of Soldiers," "Post-War Occupational Plans of Soldiers (Overall Report)," "Soldiers' Plans to Own Businesses After They Leave the Army," "Soldiers' Plans for Farming After They Leave the Army," "Soldiers' Plans for Government Jobs After They Leave the Army," "Post-War Educational Plans of Soldiers."

Other Army activities in the field of vocational guidance include the following:

Guidance programs over the air; e.g. Target Tomorrow.
Counselling programs in convalescent hospitals.
Accreditation program, and the use of United States Armed Forces Institute Form No. 47 entitled, "Application for Credit for Educational Achievement During Military Service."
Various tests—General Educational Development, subject, end-of-course, classification (aptitude, trade, ASTP).
Records—qualification card (War Department AGO Form No. 20), service record, discharge paper.

During the war years the major objective of the Army was the winning of the war in the shortest possible time with the least possible loss of life. Vocational guidance was in a secondary position. However, the materials mentioned were widely used during those years, and in the time since the war ended, in Army Separation Centers and in the Army Education Program, by counselors and Information-Education Officers, on returning transports and in Zone of Interior and overseas installations. As the emphasis has changed from winning the war to preparing for the return of soldiers to civilian life, more importance has been attached to the use of these materials.

W. A.

ASSOCIATION OF SCHOOL AND COLLEGE PLACEMENT.

Organized along national lines, the Association of School and College Placement is concerned with such problems as apprenticeship systems, recruiting of employees, career implications of student part-time employment, educational counseling, junior employment services, occupational orientation and adjustment, summer employment for students in relation to after-college placement, student personnel problems, and various aspects of vocational training.

The Association was established July 1, 1940 by a State-wide Committee on Educational Cooperation of the original Job Mobilization Program of the Governor of Pennsylvania. It has conducted extensive nation-wide studies of college vocational guidance and placement facilities. The Association publishes a quarterly journal, School and College Placement, which contains authoritative articles and survey reports of interest to college personnel and placement officers. The General Offices of the Association are located at 3400 Walnut Street, Philadelphia, Pennsylvania.

R. Z. K.

ART, APTITUDE FOR. Art, like music is a career not open to anyone merely on the basis of surface interest or even determination. One cannot resolve to be an artist or musician, seek training, and expect success. Enough is known to support this generalization, but caution is expected in its adequate understanding and in its application. It is taken for granted, for instance, that manual skills are required, as are good sensory capacities in music; but these alone do not constitute aptitude. Moreover, they exist relatively, and error may be made in assuming that a given degree of skill, alone considered, is or is not adequate. Aptitude is a complex combination of a number of factors, which if present in high degree in the individual means simply that the possibility of success in art is there. Whether success follows is largely up to the individual and to conditions in the environment which may or may not adequately stimulate him to produce real works of art.

Generalizing from research in the field, particularly from the ten-year program "Genetic Studies in Artistic Capacity," sponsored by the Spelman Foundation and the Carnegie Foundation for the Advancement of Teaching, these observations appear to have good support:

1. Artistic aptitude may be expected in from five to ten per cent of any typical school population (U. S. A.). Possibly a small additional number may qualify for certain kinds of related art work, but with more preparation, effort, and perseverance.

2. Almost invariably real ability evidences itself early, usually in the first decade of life. Unless deflected by lack of opportunity, social or economic pressure, or other interference, the ability re-

mains unimpaired throughout the normal life span. There are instances of deflection in early life, with resumption during later years (in one instance as late as sixty) with notable success thereafter.

3. Basic to success in any art career is *craftsman skill.* Though existing in varying degrees in different individuals and essential in some degree, a high degree may not necessarily mean great talent, but rather the one condition favorable toward it. Craftsman virtuosity alone may facilitate scroll sawing or medical drawing with little reference to art. In view of its basic nature, however, it is of significance that craftsman skill appears to run in *family stocks* and, hence, is in large part a matter of *stock inheritance*. This means simply that the individual with craftsman skill comes from stock that has the neuro-somatic make-up which permits easy acquisition of craftsman skills, while those with no known ancestry of this type are less likely to find such skills easy to acquire, if at all. Though there may be exceptions, this is the *expectation,* supported by considerable evidence. *Stock inheritance,* which has scientific standing, is not to be confused with direct inheritance (parent to offspring) of acquired characters, which is not acceptable to biological science.

4. With a moderate, or high degree of craftsman skill, plus interest, energy, and training in specific techniques, an individual may become an engraver, lithographer, sign painter, poster artist, designer, animator, and do other types of work not requiring aesthetic perception and creative imagination of a high order such as would not be expected in commercial work. The term applied is usually *commercial artist.*

5. If a degree of skill is combined with technical knowledge, training in art history, and other necessary components as engineering principles, the outlet is that of the architect. But in this field there is specialization with each division requiring its own coverage of preparatory study and training. Marine architecture, office building design, landscape architecture—to mention diverse examples—require preparation obtainable ordinarily in specialized colleges or departments. Some of the factors given below as important for creative artists apply to some extent to these specialized art careers.

6. The *creative* artist, considering the individual who produces in the studio or on surfaces, as in the case of the muralist, primarily for more or less enduring and permanent works of art, whether for his own satisfaction or for the execution of a commission, usually is an individual of uncommon qualifications. Ordinarily he will possess an average or higher degree of six ability-traits: craftsman skill, volitional perseveration, aesthetic intelligence, perceptual facil-

ity, creative imagination, and aesthetic judgment. Of these, the first and last two are indispensable. Craftsman ability is taken for granted. Volitional perseveration is the ability to adjust one's application of energy to the requirements of a task and to sustain that application throughout. Contrary to popular notions of the creative artist's manner of work and Bohemian living, the producing artist of real character works in the manner best suited to his needs, and the regular work period is more common than otherwise. Aesthetic intelligence is simply the possession of general intelligence with special utilization of such factors as discriminatory and spatial factors needed in his work. The artist, particularly the one whose interests lie in human experience and abstraction of human character, traits and foibles, is usually a keen observer and mental note-taker, being able to perceive significant aspects and details that are usually missed by the non-artist. This trait is perceptual adequacy and refers to the readiness and adequacy of observation. Creative imagination refers to the ability to conceive from the perceived experience and memory items a form or design or composition expressing in aesthetic form this material. Aesthetic judgment is the evaluation of an aesthetic form in terms of aesthetic principles or qualities.

For the identification of proficiency in these six traits few tests are available. Tests exist for the measurement of aesthetic judgment; others are in process of development for perceptual facility and creative imagination. Craftsman skill will show up in early school years and will be present in any student taking art courses. General intelligence tests may be used for aesthetic perception. The Meier Art Judgment Test and the Strong Interest Inventory will serve to indicate those factors, and additional data will also be supplied by the Allport-Vernon Scale of Values and the Minnesota Paper Form Board. The test instruments should provide a fair indication of basic information. It is probably safe to consider any middle range of general intelligence as required, though the chances of success are better the higher the intelligence. A sampling of *successful* artists representing varieties from caricaturists to sculptors disclosed an average of about 120 IQ, with only two below 100. Success in an art career is more probable if there is present in the individual all the traits enumerated—the more successful, the higher the degree of the traits possessed.

In counselling youth it may be difficult to distinguish true aptitude of a creative nature from technical virtuosity. The assiduous copying of dress designs, caricatures, stereotyped personages, and the like may permit the showing of products which suggest considerable skill. In many such instances, however, there is no evidence per se of real originality—or the conceptual ability to synthesize experience into a personal (if not original) art expression. The guidance called for in such case might be to inquire as to how the individual "got the idea" for his work. Even though he may say "out of my head," too often he has merely forgotten having seen the basis for his drawing in funny papers, magazines, and other sources; he is simply redrawing another's conceptions. The creative artist also gets his conceptions from experience, but that experience is his own or he has at least conceived the aesthetic form in his own way that expresses his experience.

To recapitulate: Art aptitude is a complex of interests, abilities, energy, perseverative traits, and other uncommon factors. Craftsman skill which comes of craftsman *stock* inheritance is basic; ordinarily the possession of this determines, along with environmental exigencies, the pattern of development. The individual who has the craftsman manner, will, if he possesses in addition at least average intelligence and interest in nature, people, social conditions, human aspirations and the like; is patient and perseverating, keenly observant, inventive in being able to objectify his experience in aesthetic form. This *craftsman attitude of mind* will even foster good aesthetic judgment, which, however, is enhanced by every increment of effective experience. Manual skill plus intelligence plus insight plus inventiveness and projective contemplation appear, hence, to be basically involved, all with each other. Art aptitude, beginning with craftsman skill and craftsman manner, is a self-evolving growth, determined by basic skill and its mental and physical exercise, oriented and guided by intelligence.

Though there are exceptions to all things, it may be observed that a successful career in art requires: (a) possession of basic skills, traits, and abilities; (b) considerable energy, and good health, considerable fortitude in enduring a period of meager income, (d) an interest in people or things, (e) a resilient personality capable of withstanding rebuffs and disappointments. Though there are self-made artists, the usual procedure is to spend a number of years in a good art school, the length of time depending upon the type of career desired and the educational opportunities offered. For a commercial artist career the best schools would most likely be found in metropolitan areas near work opportunities. For the creative artist the choice of school may rest with the type of product or class of art in which there is most interest, with the final aspect being the initiative and drive of the individual himself. Once he has acquired the technical skills and such acquaintance with various mediums as interest him, the rest is up to him, though the study of his own weakness and strong points may be furthered by contacts with good critics and fellow artists.

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Note: The research project "Genetic Studies in Artistic Capacity" is reported in thirty articles included in References 7, 8 and 9.

N. C. M.

ART APTITUDE TESTS

Horn Art Aptitude Inventory. This inventory has been in the process of development during the past eight years and has been used with freshmen entering the Art School at the Rochester Institute of Technology and with groups of high school students competing for Art School scholarships. After having experimented with various types of art tests over a period of years the Art School faculty were of the opinion that certain qualities essential to success were not being satisfactorily measured. Charles C. Horn created the test after considerable experimentation and refining over a period of years and is responsible for the present edition.

The test may be used for an art aptitude test at the high school or college level. The test is divided into two distinct sections: (1) Drawings of Lines and Shapes, subdivided into two parts: (A) Scribble Exercise, and (B) Doodle Exercise; and (2) Imagery. Section I (Part 1A) is designed to give the student confidence that he can draw a reasonably simple shape or picture. The Doodle Exercise (Part 1B) is designed to obtain examples of the student's quality of lines, ability to follow directions, originality and compositional sense. The Imagery Section is designed to obtain an indication of the scope of a student's interests and the fertility of his imagination. A more detailed discussion of these purposes is given elsewhere.[2]

The directions for administration are self-explanatory. The time required for Parts 1A and 1B is 5 minutes each, and for Part II the time required is 35 minutes.

The inventory was standardized on college students. It has also been used for individual testing in several of the Veterans Administration Guidance Centers. It is suitable for either sex. Scoring is done on a five point scale.

Validity has been established through two studies and others are in progress. The correlation between the inventory and faculty ratings of success of 52 graduates of the classes of 1941, 1942, and 1943, in a three year full-time program was +.53. The correlation between test scores and success in scholarship classes was +.66 (N = 36).

The scoring is still somewhat subjective but studies have been carried on which indicate that a lay person can score these as adequately as members of the Art School faculty. A scale is provided with the manual which assists in making the scoring more objective. Correlations between the scores given by Art School faculty members and a lay person vary from +.79 to +.86.

In addition to the Horn Art Aptitude Inventory's being an instrument to discover art aptitude (which is our main objective) it appears that it had definite possibilities for the study of personality. This fact was recognized by Dr. Elizabeth F. Hellersberg in 1938 and, using Part II of the Horn Art Aptitude Inventory as a basis, she has developed a test which she has named "The Horn-Hellersberg Test."[1]

At present, this inventory is distributed by the Educational Research Office, Rochester Institute of Technology, Rochester, New York.

References:

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2. Horn, C. C. and Smith, L. F. The Horn Art Aptitude Inventory. Journal of Applied Psychology, 1945, 5, 350–355.

C. C. H.

Lewerenz Tests in Fundamental Abilities of Visual Art. The author, Alfred S. Lewerenz, Supervisor, Evaluation Division, Los Angeles City Schools, designed the tests described below to measure native ability rather than achievement in art.

Nine separate tests are provided to appraise seven elemental art abilities by utilizing art subject matter that indirectly tests certain skills. The tests are presented in three parts designated as follows:

Part I: 1. Recognition of Proportion
2. Originality of Line Drawing
Part II: 3. Observation of Light and Shade
4. Knowledge of Subject Matter Vocabulary
5. Visual Memory of Proportion
Part III: 6. Analysis of Problems in Cylindrical Perspective
7. Analysis of Problems in Parallel Perspective
8. Analysis of Problems in Angular Perspective
9. Recognition of Color

These tests were constructed on the basis of data obtained from a survey of available researches, references, and tests in the field of art and related studies, including an analysis of the visual art course of study of the Los Angeles City Schools with regard to requisite abilities and attainable skills.

The separate tests are described as:

Test 1. Recognition of Proportion. Evaluates a person's aesthetic judgment with reference to recognized form and beauty. Enables the instructor to classify students according to individual needs. It presents fifteen sets of drawings in multiple choice response situations. The first part consists of standard forms while the second contains problems based on abstract proportion and balance.

Test 2. Originality of Line Drawing. Designed to test the degree, type, and development of originality possessed by each person. Ten problems consisting of sets of dots, ranging in number from three to eighteen, and arranged in geometric fashions must be considered by the examinee in preparing his drawings. This screening process prevents reproduction of favorite figures and designs and tends to insure originality in both abstract design and fanciful or naturalistic interpretations.

Test 3. Observation of Light and Shade. Intended to measure ability to recognize the details of a composition and to comprehend the relationship of associated parts of the whole in compositions of varying complexity. The places, where omitted essential lights and shades should be, are to be indicated by marks in a series of ten drawings arranged in order of difficulty.

Test 4. Knowledge of Subject Matter. This is an art "trade terminology" vocabulary matching test. It consists of six sections of ten pairs of words in each. The first set is a sample of how responses are to be made. The other five sets deal with materials, craft and graphic processes, drawing terms, and pictures.

Test 5. Visual Memory and Proportion. This is a test of ability to reproduce a form in proportion, from memory, with a line drawing, after a short period of observation.

Tests 6, 7, and 8. Analysis of Problems in Perspective. These tests were constructed to determine ability to analyze critically several compositions of varying complexity. Each test consists of a number of pictures containing one or more incorrectly drawn elements which the examinee marks. Test 6 considers cylinders and ellipses as ordinarily seen in everyday life; Test 7 contains pictures involving parallel or one point perspective; Test 8 covers the principles of two point or angular perspective.

Test 9. Recognition of Color. This test measures the capacity of the eye to discern color distinctions which involve discrimination ranging from color blindness to high sensitiveness. The test is a multiple-choice six response type with forty-eight colors, tints and shades requiring the identification of the prevailing color. The examinee is required to select the predominant standard color in each of forty-six unknown variations.

The tests were standardized on 1,100 unselected persons ranging from third to twelfth grade ability who had art training found in the general population. Norms are also available for first-year university art students.

The coefficient of reliability for the test battery obtained by the product-moment method was found to be .87 (P.E. .018).

Validity. When total scores were correlated against instructors' semester grades in art, a coefficient of .40 (P.E. .027) was determined. A further correlation based on instructors' estimates (of work done over a five month's period in an elective art course) and test rankings of forty-two high school students yielded a coefficient of .63 (P.E. .063).

A comprehensive Manual of Directions supplies definite, concise information concerning each of the tests, instructions for giving and scoring each test, suggestions for interpretation of test results, and norms including ability ratings. Specific directions for examinees are contained in the test booklets for each separate test. Directions for scoring are repeated on the scoring key. A transparent template key is provided for scoring Test 5, Visual Memory of Proportion.

The entire battery can be administered, either to an individual or a group, by any person who will carefully follow the Manual of Directions. The time limits are 35 minutes for each Part of the battery. The scoring is entirely objective. Hence, the tests can be scored by clerical personnel who will exercise care in following directions given on the scoring key or in the Manual of Directions.

This battery of tests is published by the California Test Bureau, 5916 Hollywood Blvd., Los Angeles 28, California.

W. W. C.

McAdory Art Test. The materials for this test were assembled by Mrs. Siceloff (Dr. McAdory) over a period of years of experimentation and revision described in *The Construction and Validation of an Art Test, No. 383, Teachers College, Columbia University.* The McAdory Art Test consists of 72 plates. Each plate consists of four pictures with variations of the same subject. In the construction of the test three types of art elements were used. Plates 1, 4, 7, etc., are based on form and shape; 2, 5, 8, etc., what is technically known as notan; plates 3, 6, 9, etc., upon color. The person taking the test is to rank the four pictures as he judges them in order of merit from best to worst, recording his judgment on a record blank. A score of one is given for each correct placing according to a key derived from rankings by experts.

The plan of scoring is quick and convenient and readily understandable. Table 15, *Validation and Standardization of the McAdory Art Test. Siceloff and Woodyard.*

Tasks 37 to 72 duplicate tasks 1 to 36 in the objects and qualities represented, by measuring the closeness of scores on the two parts of the test. The probable error from the test as it stands varies from 3 to 4 points of the range of human capacity. Carrol and Eurich (32) find a reliability coefficient of .82 for 100 college students by the Spearman-Brown procedure. *"Abstract Intelligence and Art Appreciation,"* Journal of Educational Psychology, March, 1932.

Validity and Standardization of the McAdory Art Test by Margaret McAdory Siceloff and Ella Woodyard and the Staff of the Division of Psychology Institute of Research Teachers College. (Investigations reported in this monograph were made possible by a grant from the Carnegie Corporation) Bureau of Publications, Teachers College Columbia University, New York City 1933.

The Test was administered to 5173 individuals and the results recorded under the following sections. I. Validation of the Scoring Scheme. II. Validation of the Separate Tasks. III. Grade Norms. IV. Age Norms. V. Norms for Ages over 18. VI. The Reliability of the

Test Scores. VII. The Specialization of Esthetic Appreciation. VIII. Different Plans for Scoring.

Table 12 of this monograph gives the estimated mean score for New York City children and adults. Selected data are here shown.

	male	*female*
9 year old	68	68
10 year old	103	114
11 year old	110	123
12 year old	116	132
13 year old	122	139
14 year old	127	145
15 year old	132	150
16 year old	137	154
17 year old	140	157
18 year old	144	159
19 or over, the ability of the average adult in New York City	145	160
The ability of the average first-year student in Art School	173	179
The ability to exceed by only 1% or fewer of the adult population of the sex in question	202	220

The McAdory Art Test; A portfolio of 72 plates, 24 of these color plates. Published and sold by the Bureau of Publications, Teachers College, Columbia University, New York City. 1929.

M. McA. S.

Meier Art Tests. The Meier Art Tests are intended to measure the relative degree of success an individual might expect if he sought proper training. The tests are in part completed and in part under development. Part I, Aesthetic Judgment, was first published in 1929 and an improved, revised edition in 1940. The test consists of a single book of illustrations in pairs, one hundred in number, which the subject evaluates by indicating left or right choices. The pictures in each pair are alike in every respect except one, and this one differentiation involves some aesthetic quality or principle basic in all graphic art. The theoretical principle of the test is that it provides a sampling of the types of judgments made by the artist in organizing a composition or piece of sculpture or a mural, since the judgments required in the book of illustrations are of the same nature as those required in the studio.

This test has been standardized for junior high school, senior high school and college or adult levels. Instructions, explanation of the basic theory of the test and norms are available in a manual.

The test was developed as a Carnegie Research Project, and the cost of development was born largely by grants. The test is hence available on a cost basis. The test materials were prepared by the author, assisted by a number of artists and art students and are in ink, charcoal pencil, crayon, tempera, and other media. The subjects used in standardization were principally from the public schools and high schools of Kansas City, Missouri, Minneapolis, Milwaukee, Detroit and Cleveland. In addition, college art teachers, directors of art, and some artists and sculptors assisted in the development of the norms. The measurement of validity of the test consisted of a consensus of art experts' judgments plus degrees of concurrence ranging from 60% to 90% on the part of about 2,000 subjects, in large part art students. Preliminary validity was afforded by the selection of the test materials from works of art that have been in existence in many instances over centuries and hence had survived the test of time. The use of accepted art works avoided the possibility of including contemporary works whose stability was not yet established. Validity was also established by giving the test to adults of high intelligence, art and non-art, to measure the factor of intelligence as a possible component. The fact of overlapping at all age levels is also taken as demonstrating the presence of a semi-native factor independent of training or maturation. Reliabilities as determined by the split-half technique and by repetition range around .70 and .75.

Part II which at the present time is incomplete, owing to temporary cessation of work during the recent emergency, will consist of materials designed to test creative imagination by various approaches, both literary and graphic, and by techniques which in some instances are relatively new. This section of the test is calculated to duplicate the studio situation in which the artist develops his theme or idea into a schema out of which a composition or art product may ensue.

Part III, which is in the projected stage, will test the subject's ability to utilize sense data in an effective way for the purposes of artistic production. The procedure will involve various kinds of tests, sampling such mental functions as form perception, recognition memory and isolation of significant elements in a complex situation.

Part I of the Meier Art Tests is available from the Bureau of Educational Research and Service. N. C. M.

ART TESTS, CRITICAL EVALUATION OF THE PRINCIPAL. Since aptitude for the graphic arts is relatively uncorrelated with other special talents or general mental ability it is necessary that a unique test be designed if the basic elements necessary for success in art are to be measured. The construction and validation of such an instrument is not without difficulties in view of the fact that artistic talent is generally conceded to be a composite of many evaluative responses, abilities and innate neuro-physical factors. However, recent researches in this area of measurement have clarified our understanding of the nature of artistic aptitudes to a considerable degree, and as a result of these investigations the vocational guidance worker is now in a position to make use of certain art tests in giving advice to those individuals who contemplate embarking upon an artistic career.

The art tests currently available involve, in general, two types of measurement. The first type, which is utilized in the McAdory Art Test, The Meier Art Judgment Test and to some extent in the Lewerenz Test, is that of art judgment or "appreciation." The authors of these tests contend that aesthetic judgment, resting upon fine discrimination, feeling and insight is basic to achievement in the graphic arts. The second type of measurement deals with learning and basic skills and is, strictly speaking, a measure of attainment. The Knauber Art Test, The Lewerenz Test and the Knauber Art Vocabulary Test are examples of tests which utilize this type of approach. The ensuing discussion purports to be a critical review of the five art tests just mentioned from the standpoint of test construction and validation.

One of the most ambitious attempts to devise an instrument for detecting the talents necessary for success in art is the McAdory Art Test. The preparation of the materials used in this test involved many years of research including standardization on over 6,000 subjects. The standardization was limited, however, to subjects living in the New York City area.

The McAdory test is based on the assumption that art judgment—an ability that is considered basic to success in art—can be measured by determining the degree to which an individual's preferential ranking of art objects agrees with that of judges of recognized artistic ability. The materials consist of 72 plates each of which depicts a single object in four different ways. These plates—some of them commendably in color—deal with common objects such as clothing, furniture and utensils as well as architecture and painting. The selection has the disadvantage of including objects the reactions to which are fairly stable, with materials like clothing and automobiles which are subject to changes in current taste. A perusal of the McAdory plates reveals that some of them are at present very much out of date.

The McAdory test apparently measures some trait either innate or not subject to improvement in art classes since scores are not significantly altered by training. The correlation with general intelligence is low. Reliability coefficients vary with different groups from .79 to .93, the highest for an unselected group of adults.

The test is intrinsically interesting because of the variety and character of the materials of which it is composed. It can be used in all grades, colleges and art schools. The greatest usefulness of the test appears to be as an indicator of aptitude for vocations requiring an appreciation of art values in consumer, vocational and educational fields.

The most recently developed instrument for measuring art aptitude is a series of tests, The Meier Art Tests, Part I on art judgment being now available. This part is a revision of the well-known Meier-Seashore test. In the revision, Meier removed certain non-discriminating items, weighted the more efficient items and shortened the test considerably. Meier announces that Parts II and III of the battery are now in preparation and that they will measure creative imagination and aesthetic perception.

The test on art judgment is in the form of a booklet containing 100 pairs of pictures. The subject makes a choice or preference between the two pictures which are very nearly alike, differing in only one respect. One picture is more or less better than the other. The problem is to discern the one wherein a certain principle functions to make for a greater aesthetic value. The ability to make uncritical responses to compositional elements is alleged to be an untaught facility in perceiving aesthetic quality. This claim may be justified by the fact that many subjects without formal training in art score well on the test. For example, some children in the junior high school range make scores as high as any made by adults, college art students and mature students in two of the foremost art schools in the country.

A constructional feature of the art judgment test is the use of an operational rather than an absolute criterion in the selection of the materials to be judged. Good art is taken to be what artists, accepted art critics and able laymen call good art. The majority of the "correct plates" in the test are therefore valid in the sense that they have been produced by the great masters and have withstood the test of time.

Reliability coefficients ranging from .70 to .84 are reported for the art judgment test. While not impressively high they indicate sufficient reliability providing the test is used to discover probable art talent in the general population and is not used in an attempt to grade with sharp distinction one person from another. It is planned later to combine the score on the art judgment test with scores on the tests for creative imagination and aesthetic perception. This total augmented score will probably make for higher reliability as well as an enhanced validity for measurement of artistic talent.

Another art test of different design than those dealing with aesthetic judgment is the Knauber Art Ability Test. This test is a production test involving chiefly the measurement of skills and knowledge acquired in the classroom. Exercises required of the subject include: (1) drawing of figures from memory; (2) creating and completing designs from given elements; (3) detecting incongruous or inconsistent elements from drawn compositions. Additional material requires the production of certain compositions which is supposed to test the subject's creative imagination and ability to represent an idea symbolically.

When this test was administered to a group of college art majors a median score of 95 was obtained whereas the median score for a group of non-art majors was 52. This is in no sense unequivocal evidence that the test measures native ability for it may just as well mean that the art majors had learned the conventional or traditional problems of art instruction with which most of the test is concerned. A comprehensive validation procedure would seem to require data from subjects with different kinds of training and different ideas as to what constitutes good art. The reliability coefficient of .95 would also be more convincing had it not been obtained with subjects all of whom were within the sphere of the test designer's teaching influence.

The test should prove useful as an instrument for revealing the progress made by students in mastering those stereotypes and skills which the author of the test believes to be basic to an art course curriculum.

The Lewerenz Test in the Fundamental Abilities of Visual Art includes both the judgmental approach of the McAdory and Meier tests and the production approach of the Knauber test. The test is assumed to measure seven basic abilities in visual art by means of nine separate tests. These tests are grouped as follows: Part I, (1) Recognition of Proportion, (2) Originality of Line Drawing; Part II, (3) Observation of Light and Shade, (4) Knowledge of Subject Matter Vocabulary, (5) Visual Memory of Proportion; Part III, (6) Analysis of Problems of Cylindrical Perspective, (7) Analysis of Problems of Parallel Perspective, (8) Analysis of Problems of Angular Perspective, (9) Recognition of Color. The test is designed to measure abilities rather than the product of abilities.

Since the Lewerenz test is based on the assumption that art talent is a series of skills there are probably some counsellors and art teachers who will object to its use because they hold the view that art is an integrated activity not subject to the analytical approach.

Even though it is conceded that art talent can be broken down into certain basic skills there is some doubt in the reviewer's mind that all of the skills considered in this test are basic. For example, the ability to classify color which is dealt with in test 9, does not appear to constitute any real part of art talent. Also, an undue amount of weight seems to be alloted to tests dealing with the ability to perceive various kinds of perspective since many art experts contend that perspective is merely a tool which serves the artist in the production of tridimensional images.

Tests 1 and 2 appear to be the strongest part of the battery. The first deals with aesthetic judgment in multiple choice situations while the second deals with the excellence of original drawings in which each of ten areas is equipped with dots that are to be incorporated with the drawing made in a particular area.

The test should find good use in measuring art ability in the public schools. A reliability coefficient of .87 indicates sufficient reliability for group use. About an hour and a half is required for administration. As previously indicated, it is the reviewer's opinion that there are a number of non-discriminating items in the battery which could be removed without lowering and perhaps even increasing its validity and hence would make the test less time consuming.

A test which purports to measure knowledge of art is the Knauber Art Vocabulary Test. This instrument consists of 100 multiple-choice art terms which are arranged in order of difficulty. Each question is answered by underlining the response which is believed to be the most meaningful statement.

Unfortunately the test appears to be of limited value because of certain technical faults in construction and validation. The manual fails to give any information as to the basis on which the original terms were selected. This leads one to question the discriminating power of at least some of the items. Furthermore, it does not seem probable that any list of 100 words would cover the entire field of art knowledge. The validation procedure also is inadequate since it involves merely a comparison of median scores of art and non-art students without any computation of the significance of the obtained differences.

Moore has presented evidence for the lack of validity of the Knauber Test. This investigator showed that in a non-art group 20 per cent of the subjects scored higher on the test than did the median student minoring in art. Three per cent of the non-art group made better scores than that score represented by the median of the art majors. About three per cent of the non-art group scored above the median of art teachers.

A further analysis by Moore on the reliability of the Knauber Art Vocabulary Test revealed a coefficient of .81 resulting from correlating odd-even items. When corrected by the Spearman-Brown formula the coefficient became .90 which indicates that the Knauber Vocabulary Test has satisfactory reliability for most purposes.

Art tests of the types considered in this review undoubtedly have some value in predicting art aptitude. It is the reviewer's opinion, however, that they are still too limited in scope as devices for determining all of the qualities essential to success in the art field. Perhaps the complete Meier battery will provide a more extended coverage of this area of aptitude measurement. It is quite possible that the best predictive index of success in art will be based on a combination of factors including not only scores on the specialized art tests, but in addition, scores on general ability tests, personality and interest inventories together with supplementary biographical data.

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H. W. K.

AUSTRALIA

The General Position

It is now over twenty years since vocational guidance was first advocated and first practiced in Australia. However for the most part, and with one exception to be noted later, it remained outside official notice until about ten years ago when there began in New South Wales the developments which have placed that State well ahead of any other.

The war has, however, brought prominently to attention the problems associated with the scientific selection and placement of manpower and, particularly in the services, has led to the very extensive use of procedures closely related to those required in vocational guidance. The Department of Labor and National service has also made use of psychological methods in selection of munitions workers, of persons for admission to special training courses, and so on.

So great has been the demand for persons with training in these matters that psychologists were included amongst the categories of technicians who were required to lodge special registration forms with the Manpower authorities. The Commonwealth authorities have appointed a special officer to advise on the co-ordination of vocational guidance and similar activities as between various departments and areas.

The services were originally concerned with suitable allocation to various branches and arms within the service but it is natural that, with the end of the war in sight, the rehabilitation aspect is taking on more importance. Before leaving the Army, men applying for training under the rehabilitation scheme are tested to determine their capacity to profit by such training. Men with no specific employment in view are examined and advised on suitable types of work. Advice is based on a battery of psychological tests in addition to an interview which covers family history, education, previous civil employment, training obtained in the Army, personality, and interests. The Air Force and the Navy follow similar procedures, the R.A.A.F., for example, having four permanent vocational guidance officers in various areas and three permanently attached to Headquarters.

These developments are sure to have a marked effect on vocational guidance after the war. It seems also possible that if State services do not develop in all areas something might be done by Commonwealth agencies. The availability of trained counsellors, the proved success of psychological personnel work in the Services, and the anticipated success of vocational guidance applied to the rehabilitation of service men and women might go a long way towards making vocational guidance a permanent institution in the life of young Australians.

So far as techniques are concerned Australia follows in the main the methods and tests produced in England and in the United States. A fair amount of local test production has been carried out, especially by the Australian Council for Educational Research. The Australian Army Psychology Service and the corresponding section of the R.A.A.F. have both produced a number of tests.

The Position in the Various States

In the majority of the Australian states reasonable provision for vocational guidance is a promise for the future rather than actuality. This is so despite the fact that in all but one state the majority of young people leave school and enter their vocational life at the early age of fourteen when they can hardly be expected to make the best vocational choice unaided. The existence of official guidance services in most states appears to be at least partly related to the presence or absence of full university courses in psychology in those states. A training in psychology is usually given pride of place amongst the qualities required of the vocational counsellor. A full university course in psychology can be taken only at the universities of New South Wales and Western Australia, and these two states are also the ones that have most seriously tackled the provision of vocational guidance.*

New South Wales

The Youth Welfare Section of the State Department of Labor and Industry and Social Services maintains a Vocational Guidance Bureau in Sydney, the state capital, with a smaller branch at Newcastle, an important coal and manufacturing center. The Sydney Bureau is Australia's best established center. Before the war it had a staff of eight psychologists and vocationally examined up to 10,000 persons per year. The Bureau gives vocational guidance to juveniles and adults of both sexes and works in very close co-operation with the Juvenile Employment Section. Some other functions are vocational guidance and clinical examination of male inmates

* Victoria in the 1920's developed an elaborate scheme for vocational guidance which apparently placed it ahead of other States at the time. Some useful work was done in the dissemination of vocational information but the scheme was not successful, partly at least because it assumed that vocational guidance can be given by those without special training.

of Child Welfare Institutions in country towns and of all state wards in the metropolis, and examinations of applicants for certain branches of the state public service. The normal guidance procedure comprises physical and psychological tests and individual interviews.

The State Education Department conducts a parallel and co-ordinated service for pupils in schools. It employs vocational guidance officers at the technical colleges in Sydney and Newcastle, a guidance officer in its Research Office, about 20 full-time school counsellors, who are responsible for guidance procedures in the school districts to which they are attached, and part-time careers advisers in all departmental post-primary schools. The school counsellors and careers advisers naturally pay special regard to the relationship between school courses and the endorsed vocational choice of the pupils.

Sydney is also the seat of the Australian Institute of Industrial Psychology, a privately subsidized agency which can claim to have been the first institution in Australia giving vocational guidance along modern lines. In its pioneering work it has had the advantage of affiliation with the National Institute of Industrial Psychology, England.

Victoria

This state, with a population of two million and a manufacturing capacity almost equaling that of New South Wales, has at present no official vocational guidance service provided by the State.

Some years ago, as explained earlier, the Education Department appointed a vocational guidance officer to promote dissemination of vocational information to children and organized a scheme under which selected teachers were to do the work. The absence of qualified field staff and lack of official support in some quarters prevented this scheme from achieving substantial permanent results.

In November, 1943, the Commonwealth Manpower Directorate in Melbourne opened a vocational guidance section with temporarily "loaned" staff. The services of this Bureau are available for advising on special cases referred by Manpower and also for the general public. It is still too early to say whether the Melbourne Bureau will be taken over by the State authorities or will continue under its present auspices. The State Minister of Education has recently announced his intention to arrange for personnel to be sent to New South Wales for training.

There is a private bureau in the state capital, Melbourne, the "Victorian Vocational Guidance Centre" conducted by a qualified psychologist with clerical assistance only. It operates on a fee-charging basis and has received some private assistance enabling it to give advice to at least some deserving cases which cannot afford the fees.

Queensland

The Education Department has for some years employed an officer mainly concerned with educational guidance and research. More recently, it set up a vocational guidance office in the capital, Brisbane. This office has since been taken over by the State Labor Department. It is in charge of a former teacher, with a thorough training in mental testing and vocational guidance experience, and is run in close co-operation with the Youth Employment Service. Any attempt at a state-wide vocational guidance service is likely to meet with formidable problems because of the great distances between sparsely settled districts.

South Australia

There is a vocational guidance officer attached to the Education Department's head office, but plans for the full development of the service in that state do not yet appear to be worked out.

Western Australia

The Education Department in Perth employs a Careers Research Officer whose function is the collection and dissemination of vocational information. A Testing Officer is attached to the Technical Branch of the Department and is responsible for the selection of tests used in vocational guidance programmes. The Department has embarked on a methodical extension of vocational guidance services by giving intensive four-weeks' courses to teachers with one to two years' university training in psychology. These teachers, after additional practical experience, return to their schools as part-teachers, part-guidance officers. Two batches of twenty each have so far been trained under this scheme. It is intended to give guidance to all children leaving state schools, and most children leaving private schools.

Tasmania

There is no vocational guidance in the smallest Australian state, but the government has recently taken the first step towards remedying the position by calling for applications for the post of a vocational guidance officer.

D. C.

AVOCATIONS. To train for the desirable use of leisure time is one of the cardinal objectives of education. The chief motive is the provision for enjoyment and recreation during the youth's spare time so he may make the most satisfying use of leisure time in the years ahead.

There is general acceptance of the philosophy that youth should be encouraged to cultivate in number, variety, and depth the enduring interests for the wider and more intelligent use of leisure time. Public and private organizations offer recreational opportunities designed to give those individual satisfactions which enrich life, promote health, increase working efficiency, and develop personality. Important as is the direction of youth toward wholesome, constructive, and truly recreational pursuits, there are further values to be derived from avocational pursuits.

In the first place, avocations may be used as vehicles for exploring and broadening occupational horizons. Many young people are not inherently interested in any specific occupation for a future time that seems far in the hazy distance, but they can be stimulated by co-operative group activities in science, mechanics, music, arts and crafts, photography, chemistry, radio, or producing a school paper. Interests, if intense and deep, lead on to effort; and effort in turn leads to other interests and the acquirement of further knowledge. These activities exert an influence on the educational and vocational ideals and achievements of young people.

At the same time, pursuit of the activity is to some extent a practical measure of interest and ability. The intensity and duration of the interest are significant; for having followed the hobby for a while, the youth should find out whether or not the activity is really congenial and whether or not he has the abilities necessary to success in it. Success and satisfaction will be accompanied by increased activity; dissatisfaction and failure by decrease of interest, cessation of activity, and search for more desirable outlets. This exploratory role of avocations results in at least six values that are closely related to preparation for the world of work: (1) Recognition of interests and ambitions; (2) Exploration, tryout, and sampling of kinds of work; (3) Vocational training; (4) Development of work habits involving concentrated and efficient effort; (5) Contact with adults of similar interest, both amateur and professional; (6) Development of personality.

A study of lists of extra-curricular activities reveals that many of them have the status of occupations: journalism, photography, art, music, model making, aviation, radio, forensics, and science. Club advisers can do much to turn the attention of pupils toward the vocational implications of their activities. Because clubs such as camera clubs, cooking clubs, journalist clubs, and radio clubs are vocational in their very nature, they are valuable instruments through which pupils can explore related occupations and make plans regarding their careers.

A second significance of avocations for vocational guidance purposes is their value as indicators of entry classifications in employment offices. Hobbies and leisure time activities provide the interviewer with clues to classification of persons without prior work experience or training. This is true not only because such activities develop skills and work habits of occupational importance but also because they provide an excellent index to the applicant's interests. Generally it is the thing a person likes to do that he does best. The Army considers leisure time activities sufficiently important to investigate the hobby interests of every soldier. It has long been the practice of vocational counselors concerned with helping young people make vocational choices to discuss their avocations with them in the hope that their leisure interests may provide clues as to the genuineness of their vocational interests, point to new vocational posisbilities, and serve as some indication of their abilities. Many cumulative records contain provisions for a systematic record of extra-curricular activities and achievements. A recent publication has further systematized this effort. Part IV of the *Dictionary of Occupational Titles* contains a section entitled "Leisure Time Activities" which has been prepared for the purpose of assisting the employment interviewers of the United States Employment Service discover the vocational significance of fundamental interests. The section contains an alphabetical listing of 126 hobbies and leisure time activities in which vocational skills and interests may be developed. Alongside each item is given the entry classifications to which it relates. In order to show differences in degree of proficiency, related entry classifications have been arranged with a semicolon connecting classifications requiring a comparable degree of proficiency, and a dash connecting clasifications requiring a differing degree of proficiency. This listing of leisure time interests with the coded groups referring to occupations which may be the occupational outlets helps the counselor to determine the occupational significance of hobbies or leisure time activities. It is a definite aid in discovering the relationship between the avocational pursuits of an individual and his vocational potentialities.

A third significance of avocations for vocational guidance is their value in occupational adjustment. Several investigations have been made to determine the relationship between extra-curricular activities and future vocational success. Thus Jones[7] examined the vocational efficiency of college graduates in the light of their extra-curricular activities in Oberlin College and discovered that the graduates who were rated the most highly as teachers had participated in the so-called socializing extra-curricular activities to a greater extent than did those who were rated low. Gambrill[6] found a positive correlation between income twelve years after graduation and participation in extra-curricular activities in college. Though the correlation was not high, it was higher than that between income and academic grades in school subjects. A study by Dyer[2] indicated that college men who chose vocations because they were related to their hobbies showed a high degree of vocational stability, 75% of them being engaged in the same occupation ten years after graduation.

A fourth value of leisure time activities is that a worthwhile wholesome avocation is an asset when seeking employment. Applicants may be told that most employment interviewers, either directly or indirectly, will want the answers to three important questions: first, why did the youth come to this particular company; second, what can he offer; third; what are his leisure time interests? Edgerton emphasizes the importance of leisure time pursuits in individual adjustment:[3]

> It is found that occupational proficiency depends not alone upon productive service, but likewise upon satisfactory health status, personal happiness, home life, civic interest, and recreational activity. Not only does the employer now specify certain degrees of physical health and coordination but he also expresses an active concern about the recreational and hobby interests of his employees. In fact, present-day youth must recognize that the employer is becoming more and more interested in "what the employee does when he has nothing to do."

The need for training for the worthy use of leisure time was emphasized by the New York Regents' Inquiry[8] when it discovered that fewer than a fourth of pupils participated in any form of extra-curricular activity. The inquiry revealed that few young people had attained standards of enjoyment which led them to make particularly discriminating use of their leisure time, finding that what boys and girls read when they are free to choose what they will read, what they like to listen to on the radio, what they see in the movies give evidence of little discriminating preference, except for "something that is exciting, romantic, or funny."

Schools are increasingly expanding their program of extra-curricular activities to give young people more experiences in a wide variety of fields. In many schools, pupils fill out a questionnaire at the beginning of the year on which they list the activities in which they would like to engage. From the results a list is compiled which is sent to faculty members. The faculty then check the activities they would be willing to sponsor. Using both students' and teachers' responses, the club committee prepares a list of clubs from which students make their choices. Club meetings are planned and conducted largely by students, with the faculty sponsors acting as advisers. In order to prevent a student from narrowing his interests unduly and settling himself in a groove before he has had opportunity for sufficient contact with many avocations, many schools require each person to change his club every semester. In this way he can explore, through participation, many varied fields of activity.

Many instances might be cited to indicate that increased attention is being devoted to the development of leisure time interests. Experiences are provided in a variety of ways: enrichment or supplementary assignments, hobby groups and clubs, homeroom activities, hobby shows, exhibits, and displays. Some schools present official letter awards comparable to those given in athletics for outstanding achievement in extra-curricular activities. Scholarship committees frequently consider active participation in extra-curricular activities one of the requirements for deserving loans, rebate on tuition, or scholarships.

That training for the desirable use of leisure time is important has been emphasized by the use of the evaluative criteria of the Cooperative Study of Secondary School Standards.[4] This includes an evaluation of how adequately pupils are assisted in making wise choices of leisure activities. Schools are evaluated on the following six points:

> 1. Provisions are made for exploration by pupils of a wide variety of activities which may have avocational values.
> 2. Pupils are assisted in developing discrimination in the choice of leisure activities.
> 3. Pupils are encouraged to develop essential understandings, skills, and attitudes in a number of sports and games.
> 4. Pupils are encouraged to develop understandings necessary for enjoyment of products of radio, screen, stage, and press.
> 5. Pupils are encouraged to develop skills required in var-

ious creative activities, literary, musical, scientific, and artistic.

6. Emphasis is placed upon the development of interests in activities which give promise of value in life outside of school.

Hobbies and avocations are a pleasant diversion. They stimulate thinking, profitably occupy leisure time, and are a source of both pleasure and recreation. But these social and cultural values are subordinate to the practical contribution they make to the vocational planning of the individual. An avocation may contain a seed which can be nourished and developed into a full-blown vocation. The opportunity to assist in such development constitutes a challenge to the vocational counselor.

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G. F.

B

BABCOCK TEST OF MENTAL EFFICIENCY. The examination is an instrument of psychological diagnosis in both normal and abnormal mental functioning. It measures the efficiency with which potential abstract-verbal ability can function by determining the promptness and adequacy of response in situations within a subject's range of comprehension.

The efficiency variable is that aspect of behavior which is adversely affected in psychotic and deteriorating mental conditions. It is dependent upon the health of the physiological and neurological foundations of the mind. It is causally related to *capacity for emotional control,* and to those differences in outward behavior recognized as *introversion and extraversion.*[1]

The examination is of special value in marginal mental malfunctioning between psychotic or deteriorated mental conditions and normal. In such cases adjustment of some kind is usually possible if the strong and weak phases of mental functioning are known.

In mental hospitals it is of value in determining the degree and kind of mental impairment and whether or not there is real improvement. In clinics it discloses mental weaknesses which may be enough to interfere with normal adjustment though they are not great enough to be otherwise detected.

The analysis has proved to be of value in vocational guidance by showing the efficiency of different phases of mental functioning. For example, a person may be slow in perception and be quick in continuous work. Also a person with very slow mental functioning who could not do well in that part of either clerical or mechanical work which is mostly dependent upon manual speed and alertness in new situations might be very good in phases of work more dependent upon intelligent understanding.

The analysis is of importance in schools.[2] While the relation between mental age and school ability is well known, two types of poor school adjustment are apt to be unrecognized. In one there is poorer abstract-verbal ability than is suspected because it is disguised by quick alert mental functioning. In the other mental slowness is often masked by superior capacity to understand academic school work. Both types are misjudged by short-time group tests which are too much affected by the time factor and do not permit analysis which is essential to intelligent guidance.

It is of value in psychological research, for unless both verbal level and type of mental efficiency are equated results cannot be conclusive. Such control is also important in studying pathological types. Old diagnostic criteria are very confusing because of the indiscriminate mixture of different degrees of mental impairment and different levels of intelligence.

The method was validated on organic cases[3] by comparing them with the normal population both as a group and individually; by comparing later-paroled patients with those not paroled; by study of the gains made by these groups; by similar study of dementia praecox patients[4] in which a beginning of analysis of the efficiency variable was made; and by study of other types of maladjusted persons.[5]

The examination was standardized on 2899 normally functioning persons from 7 to 24 CA after studying a much larger group which included older persons and school problems.[5] The scoring was determined by making a study of each separate test of the examination at each mental level and weighting the responses in terms of yearly developing ability. This makes ratings directly comparable and immediately reveals significant discrepancies. All the tests were given to each subject at one sitting to avoid errors due to inequality of groups.

It requires about 75 min. to administer depending upon the type of functioning in each individual case. The giving and interpreting require special training.

It is published by the C. H. Stoelting Co., 424 North Homan Avenue, Chicago, Ill. Cat. 37057, Babcock-Levy, 1940.

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H. B.

BELGIUM. Vocational guidance has received a great deal of attention in Belgium, partly because the country is highly industrialized. At the beginning of the school year, principals compile lists of students who are approximately fourteen years of age and who probably will leave school within twelve months. In addition, information is obtained on the expressed occupational preferences of the children, as well as data relating to health and scholastic achievement. This and other material is then given to the vocational counselor who evaluates it after consultation with the child and his parents.

The National Educational Museum was established in Brussels in 1936 for the purpose of supplying all kinds of vocational information. It has sponsored talks, held exhibits, distributed pamphlets and in other ways fulfilled its function. It has also been concerned with the training of counselors and has taken an active interest in the activities of branches in the provinces.

Apprenticeship is used as a means of determining occupational interest and fitness. Some use is also made of aptitude, intelligence and other psychological tests.

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O. J. K.

BIG BROTHER MOVEMENT. Vocational guidance and placement are essential features of the Big Brother Movement's program for the rehabilitation of so-called problem boys. The organization primarily serves boys between the ages of ten and 16. They are essentially of two types: (1) delinquents and (2) pre-delinquents. The first group consists of boys who have already become involved in some difficulty, such as breaking and entering, truancy, or stealing. The second consists of boys who are not in any particular difficulty but whose home conditions and general environment are conducive to delinquency. Boys are referred to the agency by New York City's Children's Courts, public schools, churches, social and welfare societies, families and individuals.

The guidance and placement service is intended mainly for boys over 14 years of age. Usually at 14 they are about to enter high school and require guidance in choosing courses of study. Also, at that age they are eligible for part time working papers for certain types of after-school jobs.

Helping boys to form vocational objectives is the first step in the counselling process. In a study of over 400 boys made in 1944 by the Big Brother Movement, vocational objectives or the lack of them were found to be quite significant in boys' behavior.

Among boys with vocational objectives less truancy was noticed than among boys having no occupational goals. Boys with career aims were better adjusted to school, had better attendance and scholarship records, were less in need of leisure time guidance, had hobbies related to vocational ambitions, adjusted better to part time jobs and summer employment, showed more cooperation in getting working papers and complying with other employment regulations, were more dependable in keeping appointments and reporting back after interviews with employers.

To help boys establish occupational goals the Big Brother Movement uses: (1) vocational interest tests and inventories; (2) part time jobs, summer jobs and farm placements; (3) assignment of boys to "Big Brothers" having similar hobbies and interests, and (4) occupational literature.

The testing program includes the use of intelligence, aptitude, personality, general interest and vocational interest tests. Results of tests, visits to boys' homes, interviews with parents and boys, and other contacts with boys are recorded briefly in case history folders.

A library of more than 2,000 occupational outlines, briefs and monographs is maintained for the use of boys. New publications are added every month. The library also contains the catalogues and bulletins of more than 500 public and private schools, colleges and other educational institutions in New York City and State. A program of scholarship aid was started recently in order to help deserving boys secure special training.

Job finding facilities of the organization are designed to meet the individual needs of two types of boys: (1) those going to school and wanting or needing full time employment; (2) those no longer attending school and desiring full time employment.

Every effort is made to place boys on jobs that are closely related to their vocational ambitions. Placements are designed to be real vocational experiences rather than money making opportunities. Boys are encouraged to remain in school as long as possible.

Much time is devoted to getting boys ready for interviews with prospective employers. Great emphasis is placed upon personal appearance, speech, promptness and courtesy.

The matter of introducing a boy to an employer is made a business-like procedure. A definite appointment with the prospective employer is made. A card of introduction is given to the boy. The employer is asked to mail back this card, indicating the results of the interview. A card is also given to the boy in order to give him a part in the follow-up process. The boy's progress on the job is checked from time to time by personal interviews with both the employer and the boy.

The Big Brother Movement works constantly toward a boy's total vocational adjustment. Interest in him continues for many years. Many ex-Servicemen, who were formerly registered with the organization, have taken advantage of its guidance and placement facilities.

R. J. F.

BIOLOGY ACHIEVEMENT TEST

Williams Biology Test.

Purpose and Content

The Williams Biology Test was developed as an achievement test in High school classes. There are three tests in this series, and each consists of two equivalent forms. Test I covers structural animal biology. Items concerning human and plant life are included only as environmental factors. Test II covers human biology and man's general relationships to animals and plants as environmental factors. Test III covers plant biology and the relation of plants to other organisms as environmental factors. The preliminary edictions of both forms of Test I and Test II were at some time used in the Nation-Wide Every Pupil Scholarship Tests by the Bureau of Educational Measurements. The preliminary editions of Test III were given in mimeographed form to biology classes in a number of Kansas high schools.

Authors and Publisher

The authors of this test are John R. Williams, Emporia High School and H. E. Schrammel, Director, Bureau of Educational Measurements, Kansas State Teachers College of Emporia. The publisher is the Bureau of Educational Measurements, Kansas State Teachers College, Emporia, Kansas.

Validity

A number of valuable criteria for validating the items, as well as their proportional distribution, were utilized. The more significant of these are the following: first, the content of a number of leading textbooks of biology and courses of study; second, a consideration of the social utility in terms of economic factors, health, enjoyment of life, and so on; third, criticisms and suggestions made by teachers who had administered to their classes some or all of the several tests of the series; fourth, a study of scores and errors of students taking the tests; fifth, the relationship between test scores and teachers' semester marks given students independently of the test scores. These correlation coefficients ranged between +.46 and +.68 for the two forms of each of the three test. The average was +.58.

Reliability

The following coefficients of reliability were obtained between Forms A and B of tests I, II, and III, respectively: +.70, +.65, and +.69. By correlating scores on even-numbered items with scores on odd-numbered items, the coefficients on Form A of the three tests were .83, .81, and .75; on Form B they were .80, .84, and .72. The mean coefficient of reliability of the six forms of the tests, therefore, is .75. After these coefficients were obtained, a number of significant changes were made to equate more nearly the equivalent forms. These changes would in all probability enhance the reliability of the tests.

Administering, Scoring, and Interpreting

This test is simple to administer, to score and to interpret. The working time is 40 minutes for each division. Percentile norms are provided for interpreting the scores for each division. These norms are based on the scores made by 19,844 students.

H. E. S.

BLIND. Vocational guidance—the process of helping an individual to select, prepare for, enter upon, and progress in an occupation —is basically the same for the blind as for the seeing in principle and procedure. The factor of blindness, however, involves some modification of the usual techniques, and special emphasis on certain factors which are particularly important in the vocational success of blind individuals.

Definition of blindness. The term "the blind" includes not only those who are totally without the perception of light, but also those who have a considerable residue of vision. Blindnes sis commonly defined as "insufficient vision for the ordinary activities of life for which sight is required (e.g. reading)."

In ophthalmological terms this is expressed as "central visual acuity no greater than 20/200 in the better eye with correcting lenses; or central visual acuity greater than 20/200 accompanied by a limitation in the fields of vision such that the widest diameter of the visual field subtends an angle no greater than 20 degrees."

Central visual acuity refers to the area of acute vision in the central part of the retina, which is used for reading, writing, and other close work. The peripheral areas of the retina are areas of less acute vision but by their position enable the individual to perceive objects not directly in front of him, as, for instance, the approaching automobile. Some pathological conditions of the eye destroy central visual acuity without affecting the peripheral field of vision. On the other hand, certain diseases of the eye may destroy the peripheral vision but leave a small area of acute vision in the center of the retina unimpaired, sometimes referred to as "gun-barrel vision." Both types of visual handicap are included within the definition of blindness as stated above.

It is to be noted that the definition of blindness refers to vision in the better eye, and an individual who is blind in only one eye is not considered blind. Similarly, the definition calls for measurement of vision with lenses giving maximum correction of refractive error, and an individual whose visual acuity can be improved to more than 20/200 by the use of eye-glasses is not included in the blind group.

Basic Principles of Guidance for the Blind

The basic principles of vocational guidance of the seeing are applicable for the blind—the individualized approach, the participation of the counselee in the guidance process, the "long view" in planning, and the objective evaluation of individual abilities in the light of occupational requirements. Because of traditional limitations on employment of the blind, by which blind persons were expected to follow one of the so-called "blind trades," however, it is important to emphasize the positive approach and to help the blind individual achieve an occupational goal based on his vocational assets—abilities, interests, training, etc.—not on his handicap of loss of sight.

Vocational Information

Information about vocations which can be successfully carried on without physical vision is limited and, in some areas, fragmentary. Such research as has been done has been almost entirely restricted to compilation of data about occupations in which certain blind individuals are known to have achieved some degree of success.

The limited information available shows that blind persons have competed successfully with the seeing in hundreds of jobs, representing almost every field of employment, including the following:

Agriculture

- Farmer
- Dairy farmer
- Truck farmer
- Poultry farmer
- Apiarist

Transportation and Communication

- Laborers, streets and roads
- Manager, trucking business
- Telephone operator

Trade

- Oil land promoter
- Merchandise marker
- Commercial traveler
- Coffee taster
- Insurance agent
- Manager, employment agency
- Executive (business)
- Real estate dealer

Public Service

- Tax collector
- Secretary, school board
- Member, public service commission
- Representative in legislature
- Collector of customs
- U. S. Senator
- Justice of the Peace

Retail Dealers

- Book dealer
- Shoe merchant
- Standkeeper, news and confectionary
- Clothing-store keeper
- Coal, wood, and ice dealer
- Dry goods dealer
- Grocer
- Furniture dealer
- Fruit dealer
- Hardware dealer
- Dealer in musical instruments
- Produce dealer
- Stationery dealer
- Salesman

Clerical Occupations

- Publicity agent
- Advertising manager
- General clerical worker
- Dictaphone operator
- Stenographer
- Typist

Domestic and Personal Service

- Manager, barber shop
- Manager, poolroom
- Rooming-house keeper
- Housekeeper
- Hotel-keeper
- Janitor
- Laundry worker
- Restaurant keeper
- Dishwasher
- Domestic

Professions

- Entertainer (musical)
- Author
- Journalist
- Editor
- Clergyman
- College professor
- Lawyer
- Judge
- Composer (music)

Professions (Continued)

- Organist
- Pianist
- Singer
- Music teacher
- Musical director
- Bandmaster
- Commercial Player (theater)
- Osteopath
- Teacher, school for the blind
- Teacher, school for the seeing
- Librarian (dept. for the blind)
- Chiropractor
- Dramatic reader
- Masseur
- Superintendent of institution
- Evangelist
- Executive (agency for blind)
- Home teacher
- Social worker
- Physician's assistant

Factory Operations

- Assembly work (automobiles, nuts and bolts, locks, vacuum cleaners, telephones, electric specialties)
- Inspecting auto axles, auto valves, shoes, camera parts)
- Stuffing upholstery
- Buffing (metal)
- Drill-press operating
- Punch-press operating
- Packing (needles, cans, candy, cards, novelties)
- Core making (foundry)
- Riveting, safety razors
- Racking, window pulleys
- Stringing jewelry
- Washing machine parts
- Armature winding
- Screw setting (furniture)
- Crating veneers
- Foreman, dye-room
- Inverting bags
- Shaping gloves
- Sorting shoe findings
- Folding boxes
- Stoning dates
- Building fields for sweepers
- Inspector of shells
- Inspecting for spots and cracks (by touch)
- Splitting and sorting mica
- File-testing for hardness of bearing parts
- Sound-testing bearings for quiet
- Wiring sheet metal parts to rods for heat treatment
- Sub-assembly work (precision bench)—assembling bomb releases, control valves, etc.
- Finishing parts on small lathe, locomotive plant
- Thimbling ends of shoulder straps and kit straps, tent factory
- Rope tying and stretching, tent factory
- Army ordnance inspector, heat control plant
- Sorting parts for tool crib
- Milling-machine operator, gun sight plant
- Air-testing water-tight compartments, shipbuilding yard
- Gauging cartridges (go-and-no-go gauge), arms plant
- Chipping castings, arms plant
- Gauging gun parts, arms plant
- Polishing aluminum
- Finish filing brass parts for nautical instruments
- Bench work, motor assembly

Factory Operations (Continued)

- Assembling nuts and bolts, motor assembly
- Counting and packing small auto parts
- Filing burrs from small steel stampings, auto plant
- Plug-gauging pinion gears, auto plant
- Assembling split bushings, auto plant
- Checking blanks for spacer rings for bearings
- Checking size of bore of cones for airplane motors
- Honing out the bore of cones for airplane motors (machine job)
- Reaming precision work
- Burring aluminum parts
- Sheet metal assembly
- Crystal grinding, aircraft accessories
- Operating tube flaring machine
- Preparing material for hydropress
- One-shot riveting
- Sub-assembly work—fire extinguishers, thermos bottle holders, gas tank caps, terminal blocks, etc.
- Testing radio transmitters
- Assembling sway braces for bomb racks (airplane plant)
- Handling parts on a conveyor
- Building fuse panels (airplane plant)

Unfortunately little organized information is available as to either the detail of duties performed in these positions or the special techniques by which the blind worker accomplished those parts of the work for which vision is normally required.

Most persons active in work with the blind are agreed that the types of work in which blind people have actually functioned successfully represent but a small fraction of the jobs which can be done without sight but have not yet been explored.

The labor shortage during World War II afforded greatly expanded opportunities for demonstration of additional jobs that could be performed without sight, and the list continues to be supplemented by jobs in the new post-war industries.

In discovering new occupational opportunities for the blind increasing use is being made of job analyses and occupational studies compiled for use in the employment of the seeing, and it seems likely that future studies of occupations for the blind will be based on such material with appropriate adaptations to meet the limitations of blindness.

Counselling

The principal tool for the counsellor of the blind is the interview. Because the blind individual cannot see his surroundings or his interlocutor special attention must be given to putting him at ease, explaining to him any interruption or unexpected incident which occurs during the conversation, and by warmth of tone and handclasp establishing a closer rapport.

In the inventory of the individual's qualifications, besides the usual records of school achievement and work experience, an ophthalmologist's report on the eye condition is essential. Such a report should include age at onset of blindness, diagnosis of the eye condition and its underlying cause (etiological factor), a statement of the amount of vision remaining, with and without glasses, recorded for each eye separately, and, in case of an involvement of the peripheral field, a notation of the field limitation. The opthalmologist's recommendations as to activities to be avoided is also valuable.

The diagnosis of the eye condition and its underlying cause is important for several reasons. It may indicate activities which should be avoided in order to prevent further impairment of vision. (e.g. Persons threatened with detachment of the retina should not engage in bending, heavy lifting, or activities in which they are subject to jarring or sudden shock.) The underlying cause of the eye condition may have produced other physical affects besides blindness which deserve consideration (e.g. diabetes may impair acuity of touch.) Certain eye conditions are aggravated by exposure to dust, or to strong light; others are progressive and result eventually in total blindness despite all care.

The amount of vision remaining is another important factor since it frequently determines the practicability of certain types of work. The individual who can distinguish colors or identify large objects may frequently perform satisfactorily job operations which are impossible for one who is totally blind. The person whose peripheral vision is unimpaired can go about in the community with comparative ease, whereas the worker with a severely restricted field of vision is handicapped in travel but may be able to do some reading.

Age at onset of blindness is a third determining factor. Those who are born blind or lose their sight in infancy have no visual images of the world about them and must form their concepts by hearing and touch, or from the verbal descriptions of the seeing. Through the unavoidable restrictions of such concepts, and because of limited life experiences, they may frequently lack the background and general information necessary in some occupations. Those who lose their sight in adult life, however, after having acquired education and work experience, can depend on visual memory and will more quickly grasp the nature of objects and situations, so that they are able to qualify for many occupations which, without such background of experience, would be closed to them.

Occupational potentialities are so greatly affected by these three factors of cause of blindness, amount of vision, and age at onset, that the ophthalmological report is an essential tool for the counsellor of the blind. Moreover, the differences between blind individuals in respect to these factors constitute one of the basic reasons why it is necessary to emphasize the individualized approach and avoid generalization.

Tests

Vocational tests, which play so great a part in counselling of the seeing, have until recently been largely unavailable for counsellors of the blind. This is due to the fact that, since most tests require visual observation, or eye-hand co-ordination, considerable adaptation is usually necessary before they can be used for those who do not see.

If the test is put into braille (the embossed type which the blind read by touch), allowance must be made for the greater time required to read or write braille as compared with ordinary print. If the test is to be given to persons who lost their sight so young that they have no visual memories, substitutions of subject matter may be necessary in order to provide content which has realistic meaning for the blind individual. Even if the test is purely mechanical in nature, its standardization presents considerable difficulty because of the comparatively small number of blind people available for testing in any one community and the heterogeneity of the group in respect to such characteristics as present age, amount of vision, age at onset of blindness, and background of education and experience. Because of these technical problems little has been accomplished in providing reliable tests for use in vocational counselling of the blind.

Intelligence Tests. More progress has been made in the area of intelligence tests for the blind, than with other types of tests. Experiments in the adaptation of the Binet-Simon Tests, begun in 1913 by Robert B. Irwin and Dr. Samuel P. Hayes, have been continued for more than thirty years by Dr. Hayes and have produced the Hayes-Binet Intelligence Tests for the Blind which have been widely used in schools for the blind throughout the country. The current edition of these tests, known as the Hayes-Binet Interim Test, represents the cumulative findings of this long experience. The Bellevue-Wechsler Intelligence Test has also been standardized for the blind with satisfactory results. Both tests are available in braille and are accompanied by instruction manuals for the use of the psychometrist.

Aptitude Tests. Aptitude tests for use with the blind are of much more recent origin. While the Seashore Musical Tests have been in use with blind children since the early 1920's, and a braille edition of the Scholastic Aptitude Test of the College Entrance Examination Board was published in 1938, it was not until the emergencies of World War II that any extensive research was done in the area of mechanical aptitude tests. In 1942, the Trainee Acceptance Center of the United States Office of Education, located in Philadelphia undertook, in connection with its major function of selecting candidates for defense training classes and employment in defense plants, to develop mechanical aptitude tests for use with blind candidates. Several tests were devised: a Displacing Test and Turning Test (adapted from the Minnesota Rate of Manipulation series), Assembly and Disassembly Tests from the Pennsylvania Bi-Manual Worksample, and two Toolsample tests from the Pennsylvania Toolsample. These have been used on several hundred blind subjects and are considered satisfactory.

Personality Inventories and Interest Tests. Some use of personality inventories and interest tests (e.g. the Strong, the Bernreuter and the Kuder) has been made, with little or no special adaptation for the blind, but this experience is too limited to justify definite conclusions.

Social Adjustment

One factor which is even more important for the blind than for the seeing is that of personality and social adjustment. Handicapped by inability to perceive all that is going on around them, some blind individuals are self-conscious and awkward in social situations. Unable to see themselves or to compare their appearance with that of others, they must give special attention to the selection and care of apparel and to daily grooming. If the eyes are unsightly, consideration should be given to the wearing of artificial eyes, or of slightly opaque (not black) glasses. Good diction, a cultivated voice, and good manners are all of assistance in offsetting the handicap of blindness.

Ability to move about freely in familiar surroundings is essential, and ability to travel about the community without a guide is a valuable asset in employability. Facility in the skills utilized by the blind (e.g. reading and writing of embossed print, typewriting, etc.) is important for certain vocations. Psychological adjustment to blindness is closely related to emotional stability.

Ideally the blind individual should have solved these problems before he is ready for vocational counselling, but it often happens that he is lacking in one or more of these areas. To help him remedy such deficiencies then becomes the responsibility of the counsellor, although various social agencies may be utilized as resources.

It may also devolve upon the counsellor to suggest ways in which the blind individual may develop self-confidence and initiative by means of reading, correspondence courses, participation in community activities, outdoor sports, and social contacts. Anything which assists a blind person to achieve an outgoing well-rounded personality may be regarded as increasing employability.

Training

The term "training" includes general education, work-adjustment training, pre-vocational training, and vocational or professional training.

It is generally agreed that blind individuals should have more thorough and extensive training than would be provided for seeing persons in the same circumstances because (1) the blind person cannot readily learn by observation and imitation on the job and (2) he should have a "plus" to offer the employer as a partial offset to his handicap.

Training should, so far as practicable, be provided in institutions for the seeing so that (1) the blind individual is subjected to competition with the seeing from the beginning, and (2) he may enjoy the advantage of graduating from an institution whose standards are widely known. The exception to this rule is training in the use of the tools of blindness (e.g. braille) which is often provided for a group of blind students. As soon as a student has mastered the tools and techniques which will enable him to function without vision he should carry on his training in the seeing world.

General Education. The residential schools and the public school classes for the blind aim to provide the blind student with an education equivalent to that provided by the public elementary and secondary schools. In general it may be said that there is little vocational content in such training.

The blind individual who aspires to higher education attends a regular college or university for the seeing, utilizing braille for note-taking and some reading, the typewriter for assignments and examinations, and a sighted reader for textbook material not available in braille. College study need not be specifically related to a specific vocational objective but is often a means of launching the blind student in the competitive world under favorable conditions, as well as helping him to develop social poise and broader interests. Special care should be taken to ensure that college authorities do not, form misdirected sympathy, display too much leniency toward the blind student or exempt him from the usual requirements.

Pre-vocational Training

Most schools for the young blind include in their curricula training in a variety of handcrafts and manual trades. Though sometimes described as "vocational" subjects, the majority of these courses are essentially pre-vocational and exploratory in nature. In only a few cases do they afford trade-training sufficiently thorough and extensive to prepare the student for immediate employment.

Work-Adjustment Training

Blinded adults who have been out of employment for long periods may have lost their work habits; young blind individuals may never have had work experience to form such habits and may be unaware of kinds of work they can do.

To meet these problems, work-adjustment training is sometimes provided, usually in a special training-center or workshop, for the two-fold purpose of developing work habits and work tolerance, and at the same time determining the abilities of the untried worker. Such training includes a variety of simple manual operations and is not intended to develop specific skills.

Vocational and Professional Training

Facilities for training for the professions are for the most part open to the blind as to the seeing. The problems of adjustment are the same as in college work—the provision of sighted readers and slight modifications of procedure to make possible the student's use of braille and the typewriter. Schools of theology, social work, journalism, law, osteopathy, massage, and music, as well as teacher-training institutions are among the professional schools which have accepted blind students.

Placement

Placement in its broadest sense—"helping the individual to establish himself in his chosen occupation"—is particularly important for a blind person because of the traditional attitude of the public that the blind are a helpless dependent group. While demonstration by hundreds of blind workers that they can do productive work in competition with the seeing has helped to break down this traditional barrier, many employers and also the general public are still uninformed as to the potentialities of the blind. The services of a third person—the placement agent—and a personalized approach are therefore usually necessary.

Industrial placement has received most attention, especially during World War II, and certain factors are recognized as essential:

1. Careful analysis of the job to determine the operations which can be performed without sight;
2. Selection of the blind worker on the basis of his productive efficiency;
3. A "sales approach" to the employer to overcome traditional attitudes.

Placements in other occupational fields which involve employer-employee relationships follow approximately the same policies.

On the professional level, the placement agent for the blind is of limited usefulness in securing employment opportunities, and the identification of the blind professional worker with an agency for the blind may be a handicap. In general the sightless individual who aspires to a professional field, should secure his employment opportunities through the same channels as his seeing colleagues, and the counsellor's function is that of suggesting contacts to be made and guiding his efforts. In making applications, emphasis should be placed on professional qualifications, not on the fact of blindness.

In the case of blind persons who wish to establish themselves in independent enterprises, the placement function may consist of advice on the choice of a location, assistance in securing equipment, licenses, and insurance, and help in securing the right kind of publicity for the new undertaking. Care must be taken to encourage independence and at the same time to provide needed assistance in those problems which are at the moment beyond the capacity and experience of the blind individual in question.

Follow up

Continued contact with the blind client after placement is usually necessary, particularly in industrial jobs where the employer, being unused to blind workers, may not know how to meet the unforeseen problems which often arise in connection with changes in the operation or in working conditions, and where the blind worker, fearful of causing extra trouble, may hesitate to suggest modification. Such "follow-up" is directed toward maintaining a satisfactory adjustment of the worker to his job.

The alert counsellor will go farther and encourage the blind individual to increase his skills, seek additional training, or, on the professional level, broaden his horizon of contacts, so that he may be qualified for more responsible or more remunerative work in the future. Because many of the usual opportunities for promotion are closed to the blind, this type of follow-up work is of special importance.

Conclusion

Two basic principles characterize vocational guidance of the blind—(1) that emphasis must be placed on vocational assets, not on the handicaps, and (2) that more intensive and detailed effort is necessary on the part of both the counsellor and the counselee, to offset the handicap of blindness by special skills and superior qualifications.

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BLIND, MENTAL MEASUREMENT OF THE

Individual Intelligence Tests. Blind children have been tested with various revisions of the Binet-Simon intelligence scale for thirty years (1)—first with a tentative adaptation of the 1911 Binet scale, then with a modification of the 1916 Stanford Binet tests, and since 1942, with an arrangement of the 1937 Terman-Merrill series, called the Interim Hayes-Binet Tests for the Blind, now in process of standardization (2). Two major difficulties in making a satisfactory series for use with blind children have been the paucity of suitable test material and, in the early age groups, a scarcity of subjects. Omission of tests which cannot be given to children without vision tends to reduce interest and limits measurement to the testing of purely verbal ability. In the 1942 adaptation, the L and M tests had to be combined into one series in order to get a full quota of tests at all year levels. And so few cases are discovered and made available for testing in babyhood that all the tests below the six year level are still of doubtful validity. For children from the kindergarten through the high school, however, the Interim Hayes-Binet Tests seem quite adequate and greater constancy of IQ is being attained now that adolescents are receiving the expected advantage of the bonus for tests passed from year thirteen onward. No radical changes in the technique of testing blind children have been found necessary, so the regular Terman-Merrill Guide is used, with the addition of a few sheets of braille material for certain tests such as the Minkus completion, dissected sentences, vocabulary and plan of search.

For blind children fourteen years and over the verbal series of the Wechsler-Bellevue Adult Intelligence Tests have been found quite satisfactory (3). Here again the directions for seeing are used with the blind with only a few minor changes. In Test 2, General Comprehension, the alternate questions are used in place of items two and seven which seem less suitable for the blind; in Test 3, Arithmetic Reasoning, the last two problems which are presented to the seeing on printed cards, are read several times to blind testees; and the Wechsler vocabulary test is substituted for his digits test. This substitution seems desirable both because it is known that after childhood vocabulary is more closely related to general intelligence than is the ability to repeat digits, and because a considerable percent of blind adolescents show a disproportionate facility with digits as a result, perhaps, of their greater dependence upon auditory intake. The Wechsler verbal-scale tables are used to transform into IQ's the scores obtained in these five tests.

The validity of these two scales for the blind seems fairly well established (2). Both scales give normal IQ distributions and grade averages show a regular rise in IQ from the seventh grade through the high school. With the 1930 Hayes-Binet scale, the Wechsler IQ's show a correlation of .85 and the Interim Hayes-Binet a correlation of .82; with the Stanford Achievement tests the Wechsler IQ's show a correlation of .70 and the Interim Hayes-Binet a correlation of .72; the correlation between the two scales is .95. In all these correlations more than 100 IQ's were used.

Group Intelligence Tests. In adapting group intelligence tests for use with the blind the slowness of braille reading greatly increases the time needed and the wide differences in reading ability within grade groups cause special difficulty. The majority of blind children do not begin their schooling at five or six years of age to continue regularly through the grades, some being unwisely kept at home by their parents, while others enter a school for the blind quite late because blindness comes upon them from accident or disease after they have already spent some years in a school for the seeing. The tests have to be modified by the omission of all picture and performance test material which not only makes the tests less interesting, especially in the earlier grades, but changes them into purely verbal measurements. Also various items must be eliminated because they do not come within a blind child's experience, such as references to colors, the forms and other characteristics of objects too large or too distant to be experienced through touch, activities which depend upon the visual perception of motion, etc. But the Pressey Group Point Scale, the Otis Classification Test, a selection of verbal tests from the Kuhlman-Anderson Intelligence Tests, and the Pintner Mental Ability Tests have been adapted for use with the blind and used for preliminary school surveys. In such testing it is customary to begin with the fourth grade, where most of the children have gained sufficient facility with braille to take a group test with time limits, but there are always many children who have to be excused because of their inadequacy in braille reading. In general the IQ's obtained through group testing have been definitely below the IQ's obtained by the same children in individual intelligence testing. Correlations between individual and group tests range from .60 to .80.

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S. P. H.

B'NAI B'RITH VOCATIONAL SERVICE PROGAM. In 1908, the same year in which Frank Parsons established a Vocation Bureau in the Boston Civic House, thereby initiating a series of activities that won for him recognition as the founder of the vocational guidance movement, the B'nai B'rith Free Employment Bureau of Chicago was doing vocational counseling incidental to its placement work. This agency, set up in 1905 as one of the first non-fee charging employment offices in the United States and probably the first Jewish vocational service in the country, did not represent the first of B'nai B'rith's activities in vocational service.

B'nai B'rith was a pioneer in vocation education. In 1851 it established the Hebrew Agricultural Society to help retrain immigrants for farming. Vocational training was introduced by B'nai B'rith at the Cleveland Orphan Home in the 1890's. Early in this century, manual training schools were opened by B'nai B'rith in New Orleans and Philadelphia. The Hebrew Technical Institute in New York City and the National Farm School both enjoyed B'nai B'rith support for many years.

B'nai B'rith's early work in employment was not limited to Chicago. Beginning in 1881 the organization created in different parts of the country "labor bureaus" for the purpose of "securing employment to brethren who are out of it, in the best and most speedy manner." B'nai B'rith branches in Germany, Austria, and Poland sponsored "free labor bureaus" before the turn of the last century.

Today the vocational service activities of B'nai B'rith are directed or coordinated by its Vocational Service Bureau. Its primary purpose is to assist Jewish youth and adults in planning their careers. Undemocratic admission practices of certain schools and undemocratic hiring and promotion practices of biased employers make it necessary for Jewish agencies to offer such service. Nonetheless, B'nai B'rith is also making contributions to the vocational guidance movement as a whole.

Its present work consists of (1) occupational research, (2) publication of occupational literature, and (3) sponsorship of group activities in vocational guidance.

There are also a number of secondary functions. Thus B'nai B'rith has been experimenting with the employment of traveling counselors, who have been conducting part-time individual counseling programs in smaller communities where other facilities are often lacking. Annually the B'nai B'rith Vocational Service Bureau awards two fellowships of $500 each for graduate work in vocational guidance.

The Bureau coordinates its program of research closely with that of government agencies. It is probably the only non-governmental publisher of occupational literature operating purely on a public service basis.

In March, 1946, the Bureau released its book, *Careers in Retail Business Ownership*, by Robert Shosteck. The first eight chapters deal generally with the subject, and 35 additional chapters treat as many different fields of retail business. This is the first professional material on retail self-employment suitable for vocational counseling.

The Career News, started in 1942, is the eight-page bi-monthly periodical of the Bureau. It has a regular distribution of 32,000 copies. Among its features are "Jobs with Uncle Sam," "Advice to the Joblorn," which answers questions of general interest and value, and a full page of line drawings, accompanied by captions, treating various phases of career planning. The first series, consisting of six parts, offered a simple outline on "Choosing Your Life Work," and has been reprinted in the form of a brochure. A second series features the important post-war problem of "Finding Your Job."

The Bureau has produced three charts indicating the civilian counterparts of jobs in military and naval service. They were lithographed in two colors and are entitled "What You Can Do with Your Army Training as a Civilian," "What You Can Do with Your Navy Training in a Civilian Job," and "What You Can Do with Your Officer Training in a Civilian Job."

The charts were prepared with the cooperation of the War and Navy departments and the Department of Labor's Division of Training and Occupational Analysis. Approximately 50,000 copies have been posted in all parts of the world in which American Servicemen have been stationed. The demand has come mostly from the War and Navy Departments, Veterans Administration facilities, USES offices, draft boards, schools, manufacturing concerns, USO clubs, and veterans information centers.

The Bureau maintains a Counselors' Information Service. These are mimeographed releases of value to vocational counselors, issued at intervals of two to four weeks. They include a guide to current occupational literature and reprints of materials not easily accessible to counselors.

A number of pamphlets on occupations and vocational guidance have been published. These present overviews of broad vocational areas such as skilled trades, jobs in business, and Civil Service jobs. One of the pamphlets offers 100 multiple-choice questions and answers on jobs suitable for quiz contests. This material is primarily motivational and only secondarily instructional. The Army Service Forces have acquired more than 50,000 copies of B'nai B'rith career pamphlets for the Army Vocational Information Kits.

The loose-leaf manual, *Vocational Guidance through Groups*, by Joseph Samler, is the most comprehensive material available on this subject. Though designed primarily for out-of-school clubs, it is also used by many schools throughout the country. Part I deals with the scope and objectives of group activities in vocational guidance. Part II offers in outline form some 50 club programs developed around these objectives. Part III elaborates on techniques, tools, and resources helpful in conducting the group programs.

The Bureau took early cognizance of the fact that group activities represent an important, comparatively undeveloped, and neglected phase of vocational guidance. At a conference of group workers in vocational guidance, held under the auspices of the Bureau, the values of group activities as distinguished from individual counseling were summarized as follows:

1. They provide *some* orientation to many individuals who are not reached through individual counseling. In many cases such orientation may be sufficient to enable an individual to make his plans without further help from a counselor.

2. They may focus attention on individuals particularly in need of individual counseling.

3. They tend to stimulate demand for individual counseling.

4. They help establish rapport for subsequent individual counseling.

5. They provide an economical means of imparting information of common interest and value.

6. They provide an economical means of obtaining certain information about individuals (such as through group testing).

7. They provide a more effective means of obtaining certain information about individuals (character and personality traits as revealed in a natural group setting).

8. They facilitate use of such effective educational techniques as dramatizations, quiz contests, occupational tours, motion pictures, talks by experts in different occupations, etc.

9. They facilitate use of natural group activities for try-out experiences and other guidance purposes.

10. They make possible the pooling of experiences of many for the benefit of each member of the group.

11. They make it possible for the group to influence the thinking of the individual.

12. They provide opportunities for improvement of character and personality traits, especially facility in human relationships.

13. They offer one of the best opportunities for self-diagnosis.

B'nai B'rith sponsors professionally directed programs of group activities in vocational guidance in 15 areas of the country. About half of these are conducted under the joint auspices of B'nai B'rith and local Jewish vocational services.

M. F. B

Books of Interest to Counselors:

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   Deals with guidance in the secondary schools, with emphasis on group guidance techniques, personnel records and research, the duties of the class counselor, and the supervision of guidance. There are also chapters on the guidance of adults and the counseling of youths not attending regular day schools.
2. Allen, R. D., Stewart, F. J., and Schloerb, L. J. *Common problems in group guidance.* New York: Inor Publishing Co., 1940.

   A Manual for counselors in secondary schools, containing sixty basic units for use with groups.
3. Anderson, H. D. *Occupational trends in the United States.* Stanford University: Stanford University Press, 1940 and 1945 (Supplement).

   One of the most thorough analyses of occupational trends yet published. The 1945 Supplement is based on 1940 census data.
4. Bennett, G. K. and Cruikshank, R. M. *A summary of manual and mechanical ability tests.* New York: The Psychological Corporation, 1942.

   A very helpful book on available manual and mechanical ability tests. It contains both descriptive and critical material.
5. Best, H. *Blindness and the blind in the United States.* New York: The Macmillan Co., 1934.

   Contains chapters on the causes and prevention of blindness, general condition of the blind, educational opportunities, aids to learning, financial assistance available to the visually handicapped, and organizations interested in the blind.
6. ———. *Deafness and the deaf in the United States.* New York: The Macmillan Co., 1943.

   A companion volume to Best's volume on the blind and organized on much the same plan.
7. Billings, M. L. *Group methods of studying occupations.* Scranton, Pa.: International Textbook Co., 1941.

   Intended for teachers of classes in educational and vocational information and contains material on gathering occupational data, lesson plans, use of school subjects, and specialized methods and procedures.
8. Bingham, W. V. *Aptitudes and aptitude testing.* New York: Harper and Bros., 1937.

   One of the outstanding books on this subject. A selected group of thirty tests are evaluated. Information on the nature of aptitudes and their relation to the probability of vocational success is presented.
9. Bingham, W. V., and Moore, B. V. *How to interview.* New York: Harper and Bros., 1941.

   A comprehensive and informative volume on the techniques and problems of interviewing, including a chapter on the difficulties peculiar to vocational counseling.

10. Brewer, J. M. and Others. *History of vocational guidance.*
An extremely interesting account of the development of occupational guidance in the United States.

11. Brewer, J. M. and Landy, E. *Occupations today.* Boston: Ginn and Co., 1943.
Addressed to students and designed to develop sound thinking with regard to the choice of a life work. The emphasis is upon the principles of job selection. Facts regarding the principal occupations are presented and discussed.

12. Brown, W. and Thomson, G. H. *The essentials of mental measurement.* Cambridge: Cambridge University Press, 1940 (Fourth Edition).
A book on statistics of special interest to those working in the field of test construction or evaluation.

13. Burnham, P. S. *Counseling in personnel work: 1940–1944.* Publication No. 89. Chicago: Public Administration Service, 1944.
A bibliography containing 484 references.

14. Buros, O. K. *The 1940 mental measurements yearbook.* Arlington, Va.: The Gryphon Press, 1945.
This book and its predecessors are required references for counselors using mental tests, since hundreds of tests are critically reviewed by outstanding psychologists.

15. Cobb, S. *Borderlands of psychiatry.* Cambridge, Mass.: Harvard University Press, 1946.
Concerned with the approximately six and a half million persons in the United States suffering from disorders of speech, emotion, and consciousness who do not require institutionalization.

16. Cleckley, H. *The mask of sanity.* St. Louis: C. V. Mosby Co., 1941.
An attempt to understand and prescribe for "psychopathic personalities."

17. Cole, L. *The improvement of reading.* New York: Rinehart and Co., 1938.
The factors influencing reading ability are outlined and remedial techniques are succinctly described.

18. Cowley, W. H., Hoppock, R., and Williamson, E. G. *Occupational orientation of college students.* Washington: American Council on Education, 1939.
Presents information on occupational orientation, counseling, placement, and future trends at the college level.

19. Darley, J. G. *Clinical aspects and interpretations of the Strong Vocational Interest Blank.* New York: The Psychological Corporation, 1941.
Clinical implications of Strong interest profiles are considered. The book also includes a very valuable discussion on the general nature of interest measurement. It is a "must" for all who use the Strong test.

20. Davis, J. E. *Principles and practice of rehabilitation.* New York: A. S. Barnes and Co., 1943.

Viewpoints of the psychologist and psychiatrist on the rehabilitation of neurotics and psychotics are presented.

21. Dollard, J., Doob, L. W., Miller, N. E., Mowrer, O. H., and Sears, R. R. *Frustration and aggression.* New Haven: Yale University Press, 1939.

Case histories and other evidence are cited in support of the hypothesis that aggressions have their source in earlier frustrations.

22. Endicott, F. S. *One hundred guidance lessons.* Scranton, Pa.: International Textbook Co., 1942.

Each lesson deals with a problem of importance to junior and senior high school students and is intended to serve as a basis for class discussion.

23. Erickson, C. E. and Happ, M. C. *Guidance practices at work.*

Practical suggestions are given for the efficient management and evaluation of guidance programs.

24. Fenton, N. *Mental hygiene in school practice.* Stanford University: Stanford University Press, 1943.

School maladjustment problems are approached from the viewpoints of home and community. Well chosen case histories help to make the book very readable and emphasize the author's points.

25. Forrester, G. *Methods of vocational guidance.* Boston: D. C. Heath and Co., 1944.

Written to assist high schools which do not employ full-time vocational counselors and who do not have well developed guidance programs, but valuable even for experienced advisers.

26. Frampton, M. E. *Education of the blind.* Yonkers-on-Hudson, N. Y.: World Book Co., 1940.

An illuminating discussion of the educational and vocational development of the blind from the grades up. The book has much information of interest to those who must test and guide the blind.

27. Frampton, M. E. and Rowell, H. G. *Education of the handicapped.* Yonkers-on-Hudson, N. Y.: World Book Co., 1940.

Educational problems of the visually handicapped, deaf, speech defective, crippled, undervitalized, tuberculous, cardiacs, mentally handicapped, socially handicapped, and of those with cerebral palsy, are analyzed and prescribed for.

28. Frank, L. K., Harrower-Erickson, M. R., Kubie, L. S., Murphy, G., Sheehan, D., and Wolff, H. G. *Psychosomatic disturbances in relation to personnel selection.* New York: New York Academy of Sciences, 1943.

A symposium on the relationship between certain psychosomatic complaints and problems of personnel utilization, with emphasis on the war and post-war periods.

29. Fryer, D. *The measurement of interests.* New York: Henry Holt and Co., 1931.

    A pioneer work describing the early attempts at interest measurement.

30. Germane, C. E. and Germane, E. G. *Personnel work in high school.* New York: Silver Burdett Co., 1941.

    The three parts of the book describe: the acute need for an organized personnel program; tested ways of discovering aptitudes, interests and needs of students; and effective ways of providing student guidance.

31. Good, C. V. *Dictionary of education.* New York: McGraw-Hill Book Co., 1945.

    More than 16,000 professional terms in education are defined.

32. Greene, H. A., Jorgensen, A. N., and Gerberich, J. R. *Measurement and evaluation in the elementary school.* New York: Longmans, Green and Co., 1945.

    All aspects of elementary school testing are well taken care of in this book.

33. Hayes, S. P. *Contributions to a psychology of blindness.* New York: American Foundation for the Blind, 1941.

    One of the best books on the testing, psychological outlook, and capabilities of the blind now available.

34. Hildreth, G. *A bibliography of mental tests and rating scales (1939 Revision and 1945 Supplement).* New York: The Psychological Corporation, 1939 and 1945.

    Claimed to be the most complete listing of all tests published or described in journals. The 1939 Revision has over four thousand references and the 1945 Supplement brings it up to date. The references are numbered and indexed by topic and author.

35. Hudson, H. and Fish, M. *Occupational therapy in the treatment of the tuberculous.* New York: National Tuberculosis Association, 1944.

    Provides basic knowledge of the physical and mental effects of tuberculosis and traces the vocational rehabilitation of patients from the hospital back to the community.

36. Jones, A. J. *Principles of guidance.* New York: McGraw-Hill Book Co., 1945.

    The Third Edition of this well known book is a very comprehensive review of the entire guidance field, covering all educational levels. Impact of the war on guidance is taken up in a separate chapter.

37 Jucius, M. J., Maynard, H. H., and Shartle, C. L. *Job analysis for retail stores.* Columbus: Bureau of Business Research, Ohio State University, 1945

    Lists procedures in job analysis and evaluation as applied to retail stores.

38. Kantor, N. *Employee counseling.* New York: McGraw-Hill Book Co., 1945.

Employee dissatisfaction is approached from the standpoint of a clearly stated social and psychological theory and counseling procedures are drawn which make it possible to probe the basic causes of industrial unrest.

39. Kefauver, G. N., and Hand, H. C. *Appraising guidance in secondary schools.* New York: The Macmillan Co., 1941.

Several extensive studies in the evaluation of secondary school guidance procedures are reported and proposals are made for the future appraisal of counseling techniques.

40. Kessler, H. H. *Accidental injuries.* Philadelphia: Lea and Febiger, 1941.

Emphasis is placed upon the medico-legal aspects of workmen's compensation and public liability, and on traumatic neuroses and rehabilitation. The concluding chapter deals with the problems of physically handicapped persons and is of interest to vocational counselors.

41. Klein, P. E. and Moffitt, R. E. *Counseling techniques in adult education.* New York: McGraw-Hill Book Co., 1946.

All phases of adult counseling are very adequately handled in this compact little volume.

42. Klopfer, B. and Kelley, D. M. *The Rorschach Technique.* Yonkers-on-Hudson, N. Y.: World Book Co., 1942.

Historical, methodological, scoring, interpretation and other aspects of the Rorschach are presented by an outstanding authority on the subject with the assistance of an eminent psychiatrist

43. Lefever, D. W., Turrell, A. M., and Weitzel, H. I. *Principles and techniques of guidance.* New York: The Ronald Press, 1941.

A thoughtful evaluation of the principles and practice of guidance in American high schools with recommendations for the improvement of existing programs.

44. Lende, H., Ed. *What of the blind?* New York: American Foundation for the Blind, 1941.

This symposium contains a series of four articles on economic and vocational adjustment. Another section of particular interest to counselors is the one which describes special educational problems.

45. ———. *Directory of activities for the blind in the United States and Canada.* New York: American Foundation for the Blind, 1945.

Frequently revised, this Directory is a valuable aid in directing blind and partially-sighted persons to interested organizations and sight-saving classes in their vicinity.

46. Masserman, J. H. *Principles of dynamic psychiatry.* Philadelphia: W. B. Saunders, 1946.

Essentially a psychological approach to the major problems of psychiatry with a good deal of attention given to psychoanalytic concepts and explanations.

47. McCall, W. A. *Measurement.* New York: The Macmillan Co., 1939.

Philosophy of measurement, criteria for the selection and construction of standard and teacher-made tests, use of standard tests for grouping pupils, guidance and evaluation of teaching by measurement, school marks and reports, presentation of test results, and scaling of tests and computation of statistical measures—these are the principal sections of the book.

48. McNemar, Q. *The Revision of the Stanford-Binet Scale.* Boston: Houghton Mifflin, 1942.

Data on reliability, variability, factor analysis, item analysis, sex differences, are given. Urban-rural, occupational, sibling, age-grade, and other relationships are delineated.

49. Myers, G. E. *Principles and techniques of vocational guidance.* New York: McGraw-Hill Book Co., 1941.

Vocational guidance is differentiated from other types of guidance. The roles of elementary and secondary schools in occupational advisement are defined, and the collection of occupational information and personal data is discussed, along with other topics.

50. Neuschutz, L. *Jobs for the physically handicapped.* New York: Bernard Ackerman, Inc., 1944.

Written for laymen with physical handicaps, this book points out jobs that can be successfully held by cardiacs, persons with orthopedic handicaps, the deaf and hard of hearing, the blind and partially sighted, the arrested tuberculous, and the elderly and the aged.

51. Olkon, D. M. *Essentials of neuro-psychiatry.* Philadelphia: Lea and Febiger, 1945.

Avoiding speculation, this book describes the major personality disorders, special organic criteria in mental disorders, the psychoses with organic concomitants in mental observations, and abnormal behavior types—newer views of psychiatry and psychiatric considerations of war affected disorders.

52. Paterson, D. G., Schneidler, G. G., and Williamson, E. G. *Student guidance techniques.* New York: McGraw-Hill Book Co., 1938.

Now somewhat out of date, this book is still an important reference source for many tests and has many valuable hints on counseling which are as pertinent as ever.

53. Permanente Foundation Hospitals. *Physical demands and capacities analysis.* Oakland, Calif.: Permanente Foundation, 1944.

Based upon a study of physical demands and capacities analysis in the shipbuilding industry, but with implications for other occupations.

54. Platt, R. *The book of opportunities.* New York: G. P. Putnam's Sons, 1942.

A dictionary of jobs with personal sidelights on four thousand American occupations.

55. Porteus, S. D. *The practice of clinical psychology*. New York: American Book Co., 1941.

A textbook on clinical methods and problems, with principal emphasis on children.

56. Reed, A. Y. *Guidance and personnel services in education*. Ithaca: Cornell University Press, 1944.

Beginning with an account of guidance and personnel services prior to 1916, the book provides information on educational and occupational opportunities and community resources, individual inventories, methods of utilizing informational data, and the organization and administration of guidance.

57. ———. *Occupational placement*. Ithaca: Cornell University Press, 1946.

A scholarly work on the history, organization, problems and techniques of different types of placement and employment services.

58. Rivlin, H. N. and Schueler, H. *Encyclopedia of modern education*. New York: The Philosophical Library, Inc., 1943

Surveying the entire field of modern education, this book is extremely valuable to vocational counselors.

59. Rogers, C. R. *Counseling and psychotherapy*. Boston: Houghton Mifflin, 1942.

Interviews transcribed from phonograph records serve as a basis for discussion of the principles and techniques of counseling and psychotherapy.

60. Rogers, C. R. and Wallen, L. *Counseling with returned serivemen*. New York: McGraw-Hill Book Co., 1946.

Recommending the nondirective approach in interviewing, the book concisely summarizes the principal problems presented by veterans and illustrates both the problems and solutions by means of selected case histories.

61. Robinson, O. P. *Retail personnel relations*. New York: Prentice-Hall, 1940.

Chapters valuable to vocational counselors are the ones dealing with job analysis, description, and classification; employment procedure and operation; employment interviewing, and employment testing.

62. Roe, A. and Shakow, D. *Intelligence in mental disorder*. New York: New York Academy of Sciences, 1942.

Report of a study on the intelligence of psychotics, neurotics, psychopathic personalities, and normals.

63. Schroeder, E. M. *On measurement of motor skills*. New York: King's Crown Press, 1945.

The measurement of motor skills is approached through a statistical analysis of archery scores.

64. Scott, I. D. *Manual of advisement and guidance*. Washington: Government Printing Office, 1945.

Prepared for use of counselors in the guidance program of the Veterans Administration, this is one of the best and most succinct

books ever published in its field. It covers all the important phases of occupational advisement and outlines the general policies and procedures of the Veterans Administration.

65. Sherman, M. *Intelligence and its deviations*. New York: The Ronald Press Co., 1945.
Most attention is devoted to the clinical types seen among mental defectives, with some consideration given to the delinquent, psychotic, and the mentally superior.

66. Shartle, C. L. *Occupational information*. New York: Prentice--Hall, 1945.
Easily the outstanding book on the subject, it is technical, well documented, and contains a number of helpful illustrations.

67. Steinmetz, H. C. *A manual of industrial efficiency rating*. Los Angeles: The Harwood Co., 1943.
A concise presentation of a feasible, model rating technique that can be used in vocational schools and industrial plants. It involves the evaluation of students or employees by pooling observer judgments and sometimes by using self-ratings. Full instructions for use of the method are given.

68. Strang, R. *Counseling technics in college and secondary school*. New York: Harper and Bros., 1937.
Covers such topics as interviews, preparation of case studies, rating scales, and other guidance techniques.

69. Strecker, E. A. and Apfel, K. E. *Psychiatry in modern warfare*. New York: The Macmillan Co., 1945.
Counselors will find the chapter on demobilization timely and helpful.

70. Strong, E. K., Jr. *Vocational interests of men and women*. Stanford University: Stanford University Press, 1943.
Case studies illustrate the interrelationships between interest test scores and those achieved on intelligence and personality tests. Representing many years of careful research, it is the most solid and scholarly book on occupational interests and their measurement.

71. Super, D. E. *Avocational interest patterns*. Stanford University: Stanford University Press, 1940.
The origins and implications of avocations are thoroughly examined. Methods for their measurement are described and relationships to background, personality and occupation are pointed out.

72. ———. The dynamics of vocational adjustment. New York: Harper and Bros., 1942.
An original and stimulating approach to problems of occupational adjustment, based upon the thesis that the social environment is of primary importance.

73. Thorndike, E. L. *Prediction of vocational success*. New York: The Commonwealth Fund, 1934.
An old but historically important attempt to evaluate occupational and educational guidance techniques.

74. Traxler, A. E. *Techniques of guidance.* New York: Harper and Bros., 1945.

Prepared for the use of high school teachers, it contains much worthwhile information on tests and testing, the development of individual cumulative records, and the principles of guidance program administration.

75. Viteles, M. S. *Industrial psychology.* New York: W. W. Norton, 1932.

Published more than a decade ago, this book still contains material of value to counselors and personnel men.

76. Walker, H. M. *Elementary statistical methods.* New York: Henry Holt and Co., 1943.

A good introduction to statistics for those with little mathematical background.

77. Webb, L. W. and Shotwell, A. M. *Testing in the elementary school.* New York: Farrar and Rinehart, 1939.

Standard tests available for use in the elementary school are described, evaluated, and their range of usefulness defined.

78. Wechsler, D. *The measurement of adult intelligence.* Baltimore: Williams and Wilkins, 1944.

Needed in connection with the Wechsler-Bellevue Intelligence Scale. Also contains an illuminating discussion on intelligence measurement and on the use of the Scale in personality appraisal.

79. Wells, F. L. and Ruesch, J. *Mental examiner's handbook.* New York: The Psychological Corporation, 1945.

A handbook for use in clinical psychology, with many projective techniques, interpretive discussions, and normative data.

80. Williamson, E. G. *Students and occupations.* New York: Henry Holt and Co., 1937.

Analyzes job requirements, opportunities, and duties in the major occupations. Also outlines methods of choosing a life work.

81. Wrenn, C. G. and Bell, R. *Student personnel problems.* New York: Farrar and Rinehart, Inc., 1942.

Adjustment problems of new college students are described and recommendations made for improved articulation of secondary school and the higher institution. Research on the subject is summarized.

82. Winn, R. B. *Encyclopedia of child guidance.* New York: The Philosophical Library, Inc., 1943.

Prepared by almost a hundred eminent contributors, it contains many articles useful to vocational counselors.

83. Yale, J. R. *Frontier thinking in guidance.* Chicago: Science Research Associates, 1945.

An anthology of twenty four articles which, with one exception, have been reproduced from other sources. These articles are a good representation of current thinking in American guidance circles.

84. Yost, E. and Gilbreth, L. M. *Normal lives for the disabled.* New York: The Macmillan Co., 1945.

Designed for disabled men and women and written with the

intention of giving them practical advice as well as a psychological lift.

85. Young, K. *Personality and problems of adjustment.* New York: F. S. Crofts and Co., 1940.
A socio-psychological approach to problems of personality and personality maladjustment.

86. Doherty, W. B. and Runes, D. D. *Rehabilitation of the war injured.* New York: The Philosophical Library, Inc., 1943.
One of the best books on rehabilitation. Chapters on psychological reactions to injury, vocational rehabilitation of the deaf and hard-of-hearing serviceman, employment of epileptics, and the tuberculous and visually handicapped are of particular interest to counselors.

87. Williamson, E. G. and Hahn, M. E. *Introduction to high school counseling.* New York: McGraw-Hill Book Co., 1940.
Contains material on most phases of high school counseling, including techniques for the collection of information, use of tests, out-of-school youth, personnel work in the classroom, group work, and program administration.

88. Rosanoff, A. J. *Manual of psychiatry and mental hygiene.* New York: John Wiley and Sons, 1938.
A scholarly, comprehensive survey of the principal problems of psychiatry, with emphasis on etiology, symptomatology and therapy.

89. Good, Carter V., Editor. *A guide to colleges, universities and professional schools in the United States.* Washington: American Council on Education, 1945.
Contains much valuable information on higher education facilities in the United States, organized in tabular form.

BOYS' CLUBS. Boys' Clubs affiliated with the Boys' Clubs of America have long been conscious of the need for vocational guidance among its members. In communities where vocational guidance programs are conducted in schools, the Boys' Club makes every effort to provide supplementary activities and to fill in where needs are not being met. In other communities where an adequate program is not conducted in schools, the Boys' Club attempts to supply this service.

Much guidance is given through the informal everyday personal contact between boys and leaders. This relationship is close and rapport with the boys is established easily by the worker. Most Boys' Clubs offer some form of organized group guidance programs. An increasing number of Clubs have established vocational guidance departments, staffed with trained counselors, who conduct group guidance programs as well as individual counseling and placement service.

Group Guidance

The growing realization of the need for vocational guidance has caused workers in Boys' Clubs to become "guidance-conscious." They recognize the guidance values inherent in many of the activities which are conducted. Where possible, programs are planned and developed so as to give boys information about vocations and insight about their aptitudes and interests.

Among the group guidance activities generally found in Boys' Clubs are the following:

1. Exploratory special-interest groups and classes where boys develop interests and experiment in various vocational fields.
2. Simple analyses of the personality and interest of each boy enrolled in a program is made by the workers under whose supervision the boy may come.
3. Groups and classes devote regular sessions to discussions of occupations. A printing class, for example, studies phases of printing and publishing and explores the possibility of steady, interesting and remunerative employment in those field.
4. Boys are asked to make occupational studies of those vocations which interest them and report the findings to the group for further discussion and study.
5. Specialists address "occupational groups" on those vocations relating to their own professions. Boys' Club boards of directors usually include individuals who are in business, industry or labor and who can give talks or help secure appropriate speakers.
6. Occupational films are exhibited at periodical intervals.
7. Visits are made to stores, factories, warehouses, and offices. Information concerning the product, methods of production, employment possibilities, and requirements for training are supplied to the boys by guides.
8. Groups are organized for the purpose of studying and directing occupation and employment. Often these will spring from the exploratory classes in which boys begin to discover their aptitudes and develop their interests.
9. Classes are organized around occupations which seem to predominate in the local communities. Occupations are studied in detail, and the members of the class get a general understanding of the work, the requirements for

success, methods of entering the occupation, and the opportunities for advancement and promotion.

Individual Counseling

Although individual counseling is carried on informally in all Clubs, organized programs directed by employed trained counselors are conducted in only a few Clubs at the present time. Developments in this direction has been retarded mainly by the lack of funds and difficulty in securing trained personnel in the local communities.

Recent Developments

The Boys' Clubs of America National Committee on Vocational Guidance has presented vocational guidance programs to many groups in training institutes and has issued a number of publications to the Boys' Club field in order to stimulate and direct the development of vocational guidance programs in Boys' Clubs.

The most recent of these publications are as follows:

The Why and How of Vocational Guidance in the Boys' Club, Boys' Clubs of America, New York, 1944.

Vocational Guidance in the Boys' Club, Boys' Club Service Article, May-June, 1943.

Why a Vocational Guidance Program Should be Established Now, Boys' Club Service Article, April-May, 1944.

Vocational Guidance in the Boys' Club, Boys' Club Service Article, January, 1945.

W. M. H.

BOY SCOUTS OF AMERICA. The Boy Scouts of America is an agency chartered by Congress to promote a program of character building and citizenship training for boys. There are three age groups included in the Scout Program. The age group with which this article deals is the group termed Boy Scouts, boys from twelve years of age and upward.

Merit Badge Program

As a part of its program of activity the Boy Scouts of America has developed a "Merit Badge Program." Through this plan the boy has an opportunity to explore a wide range of activities. It is not the aim to give the boy complete vocational training, but the Merit Badge plan does afford him the opportunity to explore many avenues and to find out from first-hand experiment the kind of work for which he is best fitted and which is most congenial to him.

How The Program Works

In cooperation with leading experts in the different subjects as well as leaders in the Boy Scouts of America, requirements have been drawn up in each subject that enable the boy to get a grasp of the subject and that are well within the capacity of boys of Scout age.

As an inducement to the boy to explore a wide range of interest, a badge is awarded in each subject when he has completed the requirements. The Scout's advancement to higher rank is based in part upon the number of Merit Badges that he earns, indicating the fields that he has explored.

Classroom methods and lecturing methods have very little place in the Merit Badge Program. The requirements that the Scout meets are based on doing rather than book learning. It is administered as a program of high adventure with opportunities for the Scout to express his own initiative and individuality in what he does, not a series of classroom lessons.

Range of Subjects

The range of subjects is not limited to those having a vocational or scientific background. They include subjects which may lead into hobbies as well as those having vocational interest. There are over 100 subjects in the Merit Badge Program. These may be grouped as follows:

Agricultural

Agriculture
Beef Production
Cotton Farming
Farm Home and Its Planning
First Aid to Animals
Gardening
Nut Culture
Poultry Keeping
Soil Management
Animal Industry
Citrus Fruit Culture
Dairying
Farm Layout and Building Arrangement
Fruit Culture
Grasses, Legumes and Forage Crops
Sheep Farming
Bee Keeping
Corn Farming
Dog Care
Farm Mechanics
Farm Records and Bookkeeping
Hog and Pork Production
Pigeon Raising
Small Grains and Cereal Foods

Art

Art
Dramatics
Indian Lore
Pottery
Sculpture
Architecture
Interpreting
Music
Reading
Stamp Collecting
Coin Collecting
Landscape Gardening
Public Speaking
Scholarship

Camping and Sports

Angling
Archery
Athletics
Bugling
Camping
Canoeing
Cooking
Cycling
Hiking
Horsemanship
Pathfinding
Photography
Rowing
Seamanship
Skiing

Crafts

Basketry
Bookbinding
Cement Work
Handicraft
Leathercraft
Metalwork
Woodcarving
Wood Turning
Wood Work

Nature

Astronomy
Bird Study
Botany
Conservation
Forestry
Insect Life
Reptile Study
Rocks and Minerals
Stalking
Taxidermy
Weather
Zoology

Business and Industry

Blacksmithing
Business
Carpentry
Foundry Practice
Leatherwork
Machinery
Masonry
Painting
Plumbing
Printing
Salesmanship
Textiles

Engineering and Professions

Aero-dynamics
Airplane Design
Airplane Structure
Automobiling
Aviation
Chemistry
Civics
Electricity
Journalism
Mechanical Drawing
Pioneering
Radio
Signaling
Surveying

Health, Safety

Finger Printing
Firemanship
First Aid
Life Saving
Marksmanship
Personal Health
Physical Development
Public Health
Safety
Swimming

Sample Requirements

The requirements for the Journalism Merit Badge have been selected as typical of the kind of requirements that the Boy Scout meets to qualify for a Merit Badge and serve to indicate the opportunities that they afford for vocational exploration.

1. Write stories covering satisfactorily the following assignments, demonstrating that he knows the principles of good news writing, including the elements of a good lead paragraph: (a) A news incident; (b) A routine club or society meeting; (c) A lecture, sermon or political address.
2. Write: (a) An editorial; (b) A feature of human interest story; (c) Review of a play, a motion picture, a concert or a book.
3. (a) Explain how the articles in Requirements 1 and 2 differ; (b) Secure the publication of at least one of these articles.
4. (a) Prepare a simple set of headlines styles which will serve all needs of a small newspaper, indicating type size and approximate count for each; (b) Using this schedule, write good headlines for the three stories in Requirement 1.
5. Present photographic or cartoon copy, or the suggestions for such copy, as an illustration for a news story, and write the caption for it.
6. Read and correct proof, using the conventional proof-reader's signs on manuscript of at least two typewritten pages furnished by Counselor.
7. Show that he knows what is meant by the following terms: point, font, pica, face, case, linotype, handset, galley proof; half-tone, electrotype, screen, stereotype, mat.
8. (a) Explain the steps necessary to copyright a book, magazine or newspaper; tell what rights are granted by a copyright, and for what period.

   (b) Explain what is meant by freedom of the Press and why we have libel laws. What is plagiarism?
9. Prepare a dummy for the printer of an eight-page newspaper or magazine, including the placing of different size advertisements to cover the equivalent of two pages.
10. Explain the process of preparing a modern newspaper for publication, demonstrating a satisfactory knowledge of the various departments and executives, and their functions. Explain the importance of the deadline.
11. Have contributed as a reporter, or as editor or a member of the editorial or business staff (either voluntary or paid) on a newspaper or a Local Council, Troop, school, trade, farm, or club publication for at least six issues.
12. Present a scrap book, including unpublished copy as well as clippings of published material, filled under date and place of publication.

Opportunities to Associate with Outstanding Men

Another important feature of the Merit Badge Program is the opportunities given to associate with leaders in the various fields covered by the Merit Badge Program. The Scout organization is so set up that even in small rural districts leaders in the community give boys counsel and advice in the Merit Badge subjects and offer them frank appraisal of the boys' qualifications in the different activities and the rewards that each holds out as a life work. This is one of the unique and most helpful features of the Scout Merit Badge Program.

Merit Badge Pamphlets

To help the boy to meet the requirements in the various Merit Badge subjects, a pamphlet has been developed with the cooperation of national leaders in the various projects. Because of their interest in boyhood, these men have made their valuable services available, and the Boy Scouts of America is therefore able to offer to boys at a moderate cost a vocational series that is much more valuable than the price of the pamphlet would indicate. This is a part of the service of the Boy Scouts of America to the youth of the nation, as these pamphlet are available to all.

Boys Find Life Work

How effective the Merit Badge Program is in offering boys an opportunity for pre-vocational exploration is evidenced by the fact that many Scouts have found their life work as a result of their Merit Badge projects. Many of them have written that their Merit Badge work has been a determining factor in their later lives. Paul Siple, for example, the Boy Scout who was selected by Admiral Byrd to accompany him on two expeditions to the Antarctic, indicated that his career was determined by his interests as a Boy Scout. There are many other examples that can be cited.

References:

1. *Advancement Manual.* New York: Boy Scouts of America.
2. *Handbook for Boys.* New York: Boy Scouts of America.

L. W. B.

BUSINESSMEN, COUNSELING PROSPECTIVE. Selling merchandise at retail is pictured as clean work, physically agreeable, mentally stimulating, and free from deadening routine. Standing today in the valleys of decision ready to attempt the long hazardous climb to lush pinnacles of success are more than half a million men and women who have been discharged from the armed forces or separated from wartime jobs. At least two-thirds of this number, without any previous business experience, are ready to exchange the idea of punching a time clock for the fascination of starting their own business.

This article presents at once *warning and challenge* to all whose decisions are still hanging in the balance:

Warning. No one should into business casually expecting the money reward to be great. They might well be, but the odds are better than 100 to 1 against it. About 60 per cent of single proprietorship business have an annual intake of les sthan $10,000 out of which must come all expenses including food, clothing, and shelter. Furthermore, the best records we have show that about one man in fifteen has the courage, tact, judgment, flashes of insight, willingness to work long hours, and enough capital to go into business for himself.

Challenge. Business quicksands are not so likely to engulf those men and women who study, absorb, and use sound, tested principles of business management. For them no other desire in life transends this longing to wrest from each day's work additional personal security for themselves and their families.

This inevitably moves us to consider personal abilities. The real sales-making influence, of course, is *personality*. There is little that is mysterious, intangible, or inborn connected with it. Personality is the sum total of all one's good and bad points. It is within one's power to help oneself to an attractive personality if one cares enough to make the effort. One should not pin complete faith on a high score once made in some intelligence test. It is no guarantee that one will be successful in running his own business. Success in business depends much more on skill and sincerity in dealing with people.

Here are eight questions carefully selected from a much more comprehensive list. Persons who are not able to answer each question with a resounding *"yes"* better settle down and work for someone else.

1. Do you have the mental and physical equipment to drive hard to your goal? Are you a finisher?
2. Are you dead sure your objective is not the result of a whim or a temporary infatuation with a new set of notions?
3. Are you painstaking in regard to your personal appearance?
4. Do you have the necessary capital to build according to your plan?

5. Will you be able to work in harmony with others?
6. Will you be able to take criticism, direct or implied, from a friend, stranger, or customer without feeling angry about it?
7. Would you be willing to have your customers exchange confidences regarding your dealings with them?
8. Are you willing to give to this business your utmost in hard work at seasonable and unseasonable hours and to devote yourself to continuous study of ways and means to insure steady growth in popular esteem (patronage) and in volume (sales)?

Some Businesses Certain To Lie In The Profit Brackets

If it is decided that a man has the necessary aptitudes for success, the counselor should proceed to select the business with greatest appeal which seems certain to be a profit-making operation. Space permits only brief mention of a few which, on the basis of all available information, deserve high rating.

Shoes and Shoe Repair: Shoe rationing literally sets us back on thin heels.

Sporting Goods: Now that families are again taking to the open road, leathers and luggage will be good. Baseball, golf, sports, clothes, cameras and photo supplies, tennis, fishing, hunting, football—what an array of sporting appetites to be whetted and satisfied!

Home Furnishings, Heating, Air-Conditioning, Lumber and Building Materials, Light Hardware, Paint: Everything that has to do with building and equipping a home.

Garages and Service Stations: For trained mechanics, garages and service stations will be a safe investment as long as motor fuel distribution continues to encourage independent ownership.

Manufacturers Agents: Industry already is producing thousands of articles to meet our most ordinary needs. Manufacturers must have alert local and area representatives—thousands of them.

Retail Food Stores, Restaurants, Cafes, Bars, Soft Drink Parlors, Confectionery Shops: The heaviest demands ever placed upon the retail and service foods business will be experienced.

Radios, Musical Instruments and Appliances: We are a music loving people and we take our radio news seriously. Steady use leads to wear, "the mother of repair."

Personal Services and Supplies: Offer unlimited possibilities for those who can provide services and supplies for hotels, dry cleaners, mothers with small children, beauty shops, dairies, carbonated beverages, barber shops. The list is long and the items to be sold are many.

The Position of Appliance Dealers

For example, look at the present position of many electrical appliance dealers who, for four years, were left with little new merchandise to sell and were able to continue in business only when they added more than 300 other items to their depleted stocks. They actually sold wall paper, books, used cars, bad accounts, mules, seeds, luggage, candles, pianos, stationery, glassware, paint and paint brushes, floor coverings, real estate, sweat shirts, auto chains, sheet music, snow shoes, and mackinaws. Eighty per cent of a group of 17,000 dealers consulted by *Electrical South* say they intend to keep one or more of the substitute lines. In the regular lines, customer demand turns first to household refrigerators, vacuum cleaners, radios, electric ranges, washing machines, hearing aids, room coolers, alarm clocks, kitchen ensembles—electric dishwashers, cookers, juicers, and garbage disposal machines. This all presages real competition since these dealers already are established and ready to tap a huge backlog of purchasing power in the hands of long-suffering customers.

Businesses Classified According to Investment Required

For a business requiring a comparatively small financial outlay, say less than $2,000, consider badges and pins for fraternities and clubs, a stamp and coin shop, a valet shop, a watch and clock hospital, a locksmith shop, blue print and photostat service, letter and mimeograph service, doll hospital, delivery restaurant, fountain pen repair shop, fuel oil and supplies, laundry agency, roadside stand, sewing machines and repairs, and a poultry or fur farm. If one has as much as $5,000 to invest, consider a general storage business; a junk yard operation; health foods shop, garden tools and supplies; business machines and supplies; pet shop; haberdashery shop; frozen foods; electrical appliances and service; sound equipments and systems; a hobby center; re-capping and vulcanizing tire shop; or stationery shop. For more than $5,000, one has a much wider choice range. Leaders in this classification will be a good trucking business; a cold storage-locker business; dental and surgical supply store; a small printing and publishing business; basic home furnishings business; coal and builder's supplies; intensive farming; tourist camp; plastics furniture and specialties shop; or a good book and stationery shop. Do not overlook the many commonly accepted businesses which are found in every small town and city. No attempt is made to list them here but their number runs into the hundreds.

If an inner urge drives a man in one certain direction, do not curb his aroused initiative longer than it takes to get the right answers to the questions that control success and failure.. Capital investment, budgeting, competition, location, markets, promotion, personal abilities—all these affect business future. Build an ambition picture to match his abilities.

Planning the Budget

No one can tell a man what his budget figures should be, but budget planning can provide the facts from which he may get a picture of his anticipated income and outgo for the year. Operating expenses will vary with the nature, location, and volume of business from month to month and from year to year.

As a newcomer to business he should plan his budget from month to month, at least for a time, and if plans begin to go astray, he should never hesitate to change his spending ideas. In any budget such items as rent, wages, insurance, heat, water, and interest on borrowed money will remain fairly constant. Principal challenges to overspend will come from promotion, overbuying, and from taking too large a drawing account for himself. Budget leaks are represented by credit returns, donations, supplies, wastes due to clerical errors, charge accounts, and delivery services. Experiences of others doing different kinds of businesses with a volume of less than $50,000 a year may be averaged for his examination as follows:

Budget Items	*Per Cent*
Salaries of Salespersons	20.00
Sales Promotion	3.00
Delivery and Services	5.00
Containers and Wrappings	.75
Rent	5.00
Heat, Light, Water	1.26
Insurance	.40
Taxes	.65
Depreciation of Store and Equipment	.55
Office Supplies	.65
Communications	.55
Interest Paid	1.00
Losses from Bad Debts	.50
Miscellaneous—donations, new equipment, etc.	.80
Total Expense	40.11

Remember this does not include the cost of the goods, cash reserves, goods on order, or any drawing account for himself as owner. Common sense will tell that only constant vigilance will keep sales ahead of expenses, and that there exists no good reason to indulge in ouija board predictions to prime sales.

How Capital Is Distributed

Suppose we look at this problem from a different angle. Visualize a business as a going concern. Every move one makes will be an effort to keep assets from becoming liabilities. The mistaken notion that a month's rent and money enough to pay wages for two weeks is all the cash one needs to have on hand on opening day leads directly to failure. In general, hold one-fourth of current assets as a cash reserve. Otherwise one will be unable to buy new goods, to do necessary early promotion work, or to take advantage of cash discounts. A few suggestions are made here for the guidance of prospective businessmen:

Decide on the amount of capital needed. Seek advice from good businessmen; read trade journals and bulletins; consult friendly wholesalers who often represent your best sources of new merchandise. Be a learner always. Add together all the facts that have a bearing on your particular business before making any decisions. Then get the money you need—all of it.

Total the amount you are going to invest in stock and fixtures and allow enough cash to pay operating expenses for six months. Keep on hand enough money to take advantage of cash discounts and of unplanned expenditures you are certain to have overlooked.

Distribute your capital over the various assets. Allow about one dollar for furniture and equipment to every four dollars invested in merchandise, cash and accounts due.

Buy merchandise that can be sold readily for cash. Rapid turnover is essential to your planning. Profits stem from reorders.

Be wary about doing a credit business. Better lose a few customers than lose the business.

Exert every effort not to owe too much at one time to wholesalers and banks. Ordinarily, merchandise, cash, and accounts receivable should be four or five times the amount you currently owe, and cash on hand should be enough to pay off the debts.

Where You May Get the Necessary Capital

Personal savings and gifts from relatives and friends.
Personal loans:
    On your automobile or the family jewels
    On life insurance policies
    From commercial banks on negotiable collateral
    From personal loan companies
    Factor financing
    Federal loans to service men and women now honorably discharged
    A partner—active or silent
    Supply houses that sell fixtures on favorable terms

Actual budget percentages for many retail businesses are available from the National Trade Associations representing those businesses.

Selecting the City in Which to Locate Your Business

Naturally people are most likely to consider a location in some city or town which they know well. The actual selection may be decided on the basis of family or for financial reasons or because of the nature of the business. All known facts should be weighed carefully about the purchasing power of the people and the stability of their incomes. Any outside factors which are known to affect the merchandising situation in the city should be investigated. This is most easily done by learning the number and denominations of the churches, since these reveal the racial compositions of the people; the spendable income as shown by the number of telephone subscribers, bank depositors, car loadings, bank clearings, bathrooms in homes, and the number of persons using electricity and gas.

Never overlook the business significance of the small town. Nelson Miller, writing in "Domestic Commerce" (August, 1944) states that towns of less than 500 population house 11% of all of the people, maintain 40% of the stores, and do 23% of the total retail business.

Where Is the Street Address Going to Be?

Nothing is more conducive to a wise selection of a suitable location for the business one has in mind than a map of the shopping area. This is especially important because no general study can cover the relation of a population to all types of businesses. One can sell goods profitably if one can get the goods at a fair price, display them to advantage, and have a "spot" location. Make no decision until you have found your own answers for each vital situation which must be faced. This is no place to apply the kind of general knowledge which lacks wisdom. Before a decision is finally made it is presumed you and the counselee will have considered the nature of the business, the comparative rents in several locations, the right and wrong side of the street, the pedestrian traffic which the business seeks to attract, the availability of good parking facilities, accessibility to transportation lines, neighborhood versus downtown locations, exposure and physical conditions of the building, presence of any disturbing factors such as noise or smoke, possibilities for future expansion, number and nature of any given locations with respect to successful offices and stores which build their own traffic.

The Importance of Traffic

In a city with a congested downtown shopping area, there is no substitute for a "spot" location in that area. Never disregard *traffic* when considering location. If, for instance, the advisee wants to be in the radio and appliance business and must depend on all his "fire power" to bring customers into his store, avoid the quiet side of the street, and stay away from those side streets where there are few shoppers, and still fewer people ready to buy. Any pedestrian traffic count which does not analyze the passing crowd on rainy days, holidays, different days of the week, and different hours of the day, will be of doubtful value. Remember that twenty persons rushing to and from work will not be as important to you as one housewife whose every move indicates that she is looking for things to buy.

In choosing a location, *outside competition* should be studied just as carefully as that in the immediate trading area. It is true all over America that major competition may come from a city 30 miles away, or from a small village which is a trading center in the area adjacent to a large city. Customers want choice. They will travel miles to get it. They have always felt that they benefit from the competitive phases of small business, and except in the highest quality and price levels, men and women really enjoy shopping for values, and the opportunity to compare prices and the right to buy anything at any time, anywhere, and from anybody, as long as they can maintain these rights with cash.

The Duality of Human Choice

Other things being equal, customers will shop where they have an opportunity to compare stores, items, prices, and store personnel.

Most customers do not buy major items without some comparison. They may consider many items, many ideas, view many demonstrations, but when forced to choose one, they immediately get down to *two* and only two usually receive real consideration. Hence, in any field, the two stores which offer the most favorable opportunities for easy comparison, and even invite that comparison, will be most successful.

Putting Dollars to Work

Nothing will be more important than profits. They depend mostly upon ability to know what things customers are going to want, and knowing where one can buy one's inventory at a price that will give the mark-up one must have. Obviously a merchant is not going to sell a red cotton dress, size 14, to a woman who wants a blue gingham, size 16½, or a copy of "There's Always Tomorrow" to a man who came to buy his wife a copy of "How To Cook A Wolf." Success in getting merchandise to sell at a profit starts with the facts and figures one gets from simple unit control.

The prospective businessman must be shaken loose from any notions he may have that one can make big profits from buying for less and selling for more. Dun and Bradstreet's Standard Ratios for Retailing (1939) shows that 13,000 retailers got only 2½ cents profit out of each dollar they took in. That 2½ cents represents the greatest squeeze play in business. When a merchant must hit so small a target, he really has to study his market and his records and spend time in observing what his customers actually buy. Even in a small operation he must have his own adequate charts and records if he is to keep his dollars working for him. Carelessness pays off in direct ratio to the degree it is exercised. Any "hit and miss" system is good only when it works.

What Services Can You Afford to Offer?

Customers have been trained to expect service and businessmen compete among themselves to give it. Remember when father paid the grocery bill and was given a sack of candy for the children back home? In prewar days, the larger stores followed any leader in an abandon of giving customers at least fifty merchandise, convenience, and community services, all at "no extra charge" for goods bought subject to adjustments and allowances. But be not deceived. All service costs money and someone paid for this formidable array of "free" services.

With a little thought you can make a list of more than fifty selling and convenience services merchants offered in the prewar days. Some of these services are easily justified. The neighborhood druggist, for instance, must have someone to deliver urgently needed prescriptions; the florist must deliver flowers before they lose freshness. In spite of such obvious exceptions, however, under rigid restrictions we learned we could dispense with the so-called frills and furbelows many of which are wholly unnecessary.

For at least 65 per cent of the owners of small business, delivery services may be used as business builders and produce a profit. The owner of a radio and appliance shop expects to give certain services to customers and he anticipates the costs when planning his budget.

A study of twenty-four *convenience* services once offered by a typical small business showed that all but four could be eliminated without loss of personal prestige or business. The four convenience services which probably should be retained by the store mentioned above are the evening shopping hours (at least one night a week), rest rooms, drinking fountains, and check cashing. The cost of maintaining these four convenience services will be offset by increased sales, and therefore the budget can afford them. Start with as low an expenditure as possible; the "extras" may be added if and when business volume warrants.

What Records Should Be Kept?

You may have heard an owner of a small store say, "I have no time for keeping fancy records. I'm here all the time anyhow. Nothing can happen." He is satisfied if he can pay all he owes and have a place to eat and sleep. The businessman who insists on running his store without at least a minimum set of simple records is in no position to preserve a margin of safety and to meet tough competition in the years ahead.

A businessman *must* keep a set of simple but up-to-date records to provide the answers to the following questions:

How much cash do I have on hand and in the bank?
How much business am I doing?
How much do my customers owe me? Can my business stand this amount?
How much money do I owe?
What is my inventory of stock on hand?
What do my expenses total?
How much will I have to pay in taxes of all kinds?
How much gross margin did I earn?
How much net profit (if any) did I earn?

To answer these questions he needs:

- *Daily* records of receipts and paid-outs to show cash sales, cash received on account, cash paid out, cash on hand and in bank, cash deposited in bank, cash withdrawn from bank to pay bills and for buying in advance for sales, and, of course, the sales taxes.
- *Weekly* records to show daily record of receipts.
- *Monthly* records for verification of cash, reconcilement of bank account, accounts payable, notes payable, daily record of expenditures, records of checks written, capital and other payments, invoices received, credit memoranda, compensation records for individuals, store expenses properly classified so that he can carry totals from month to month and figure total store expenses at the end of the year.
- *Yearly* records so that he may prepare a total annual profit and loss statement to summarize his business operations, and a balance sheet.

Except for the simplest kind of service business he can scarcely get along with fewer records than those suggested here. Bare figures aided merely by memory or fragmentary records will afford neither completeness nor accuracy. The government bulletin "Record Keeping for Small Stores" by Charles H. Welch and Charles H. Sevin, Senate Print No. 11, Government Printing Office, Washington, is excellent for reference.

How to Promote a Small Business

Coordinate all promotion power. Doing a little here and there outside and inside of the location finally selected is a waste of good time. Rather, project a clear picture of the business for a period of five to ten years hence. Different owners naturally will have varying promotion ideas and not always is it going to be possible to do all the things which are desirable. However, here are nine suggestions which a businessman will do well to heed from the first day he displays the sign "Open For Business."

- *Identify the store with a good sign and a modern store front.* Store fronts today are planned as parts of the stores rather than merely as parts of separate buildings. They attract favorable attention, solve problems of location, offset competitive disadvantages, and make displays more effective.
- *Use good window display, keyed-in with advertising and telephone solicitation, to bring potential customers inside the

store. A window should say exactly what an owner would say if he stood outside with a megaphone and urged people who were passing the store to come inside and examine the ranges, radios, washers, fans, toasters, or irons that you are promoting. Good windows ought to give solid "spot" information and invite people to see, feel, hear, compare and learn more by walking right into the store. No window display should attempt to "tell all," but it should arouse enough interest to draw customer steps inside the place of business. What happens then depends upon how you

Train salespersons to know your selling plans for each day. Sales are lost when the selling force has not been informed in advance of the items featured for special customer purchases at attractive prices.

Plan attractive interior displays to go hand-in-hand with all phases of the store promotion. Merchandise always has majesty even in a day when it largely sells itself. No longer is it going to be possible for a businessman to say, "I can sell all the goods I can get to sell." A few basic principles should guide him in arranging the interior of his store for attractive displays that will "sell":

1. *Display together the things that belong together.* Shaving lotions and soaps, razor blades, talcum powders, tooth pastes; and shaving brushes should never be scattered all over the selling space. Customers do not willingly respond to selling suggestions if related items are in three separate sections of a store, be it ever so small.
2. *Assign goods to space in accordance with customer convenience.* Group the fast-moving, attention-catching merchandise items near the front of the store. These items require no selling techniques and little time from a salesperson. Farther back in the store group the merchandise which requires more careful consideration and which is subject to close inspection and comparison on the basis of quality, price, and personal appeal.
3. *The arrangement should invite customer circulation throughout the store.* Direct your traffic flow by allowing space for wide aisles. Make it easy for customers to get close to the goods on shelves, and to see a large variety of goods as they pass down aisles.

Headline the scientific presentation of advertising appeal. In importance the headline is 90% of an advertisement. To read every word in the average big city newspaper would require 10 to 15 hours. The average person gives it twenty to thirty minutes. That is why the headline is so important. There is a principle of sales psychology which emphasizes that people are thoroughly sold only when they reach their own conclusions. The best copy continuously guides the reader from one set of facts to another until it induces the reader to decide on making a purchase. Consider these headlines:

> "Eyes are rationed—one pair to a lifetime."
> "It's always midnight in our cans."
> "There are no flowers in Mother's garden as sweet as those you send her."

The things people decide for themselves are remembered, acted upon readily, repeated to friends as their own opinions. One can scarcely expect more from advertising appeal.

Watch fashion trends closely. Advertising of fashion trends, and all phases of fashion promotion, must be in the spirit of the hour.

Buy to meet the needs of individual customers. One illustration should suffice to make this practice a part of regular procedure. "He knows I love those off-shades of red and green in a price range of $29.50 to $40, size 14, and young in cut." It was the wife of the town's leading dentist speaking, and she was telling her neighbor how Mr. Clark, when he went to market, always tried to find several dresses to meet her tastes. When the frocks arrived, Mr. Clark called her on the telephone, and sales resulted. The repetition, the accumulation of many little gestures of tact and courtesy made to many customers slowly but surely builds healthy business volume.

Consider adjustments as a chance to build good will. No one ever built a solid business through neglect of complaints. Certainly a merchant will not be the gainer when a contentious customer advertises her annoyance at the meeting of the Parent-Teacher Association. The necessity for adjustments brings the customer to the store where the reasons for the complaint may be investigated. In adjustments one should have a definite fair policy, identical for rich or poor. The successful businessman must live up to guarantees, insist on immediate returns, replace defective goods, and make prompt adjustments.

Build personal contacts and make friends. Use a memory system for remembering the names, not only of those who deal with you, but of others who may some day bring you their trade. In clubs and in the lunchrooms, on the street, at church—everywhere one moves in the community—one will meet the men and women who can throw trade a merchant's way if they like him.

What Regulations Must Be Obeyed?

There are about 175,000 separate taxing units in the United States. In some cities a single business may be liable for tax payments to twenty-five or more government units. Familiarity with all labor laws issued in one year would require one to read about 5,000 laws or decisions—an average of 15 every day during the year. Even if all were read, one would still only know what one could not do.

In spite of an understandable confusion the responsibility for correctly interpreting any rulings which affect business is still the mechant's.

Controls of Many Kinds

Wage and hour controls, fair trade laws, safety regulations, sanitation in the interest of public health, public liability insurance, old age benefits, regulation of merchandising practices, unemployment insurance will not end with the war. They will be continued, but they will be subject to change on short notice. When specific problems arise write the State Department of Labor and Industry or consult the local representative of the United States Employment Service. They have answers for such questions as how much to pay employees in any specific job and how many hours you may employ them a week and, in case of female help, what overtime is allowable.

Tax Liabilities

Before a man decides to go into business for himself, he should get a comprehensive idea of his tax liabilities. He should go personally to the offices of tax collection in his community for guidance. Otherwise he will find his budget is out of alignment. Several kinds of taxes which may affect business are:

Tax on certain units of merchandise
Occupational license tax
Tax on all sales

Excise tax
Property and real estate tax
Social security taxes—unemployment insurance and old-age benefits
Income taxes, Federal and State

Any businessman may master management techniques, adopt and use the most ethical competitive merchandising practices, budget wisely for the needs of his individual business, only to bump into economic laws that make him see the single proprietorship relationships in a new light. If he decides to enter the game, he must know and obey the rules.

Planning the Use of One's Own Time

Store control implies that a man should know how to analyze, organize, train and supervise. It certainly is poor management when he permits himself to become so engrossed with details that he has no time to greet customers pleasantly and to note what really is happening in his own store. His volume line actually depends on six principal factors: selling operations, personal relations with customers, store services, promotion activities, merchandise, and records. If he gives constantly to each factor the attention it deserves at the moment, sales will respond to the stimulus.

Every owner should do a balanced job. He should make a list of things to be done each day and give undivided attention to each task as he performs it. Then he should assign himself to certain jobs to be done each week or ten-day period, such as checking advertising and publicity, making inventory of stock on hand, setting up attractive interior displays, figuring excise and sales taxes, and training his selling organization. There will remain tasks to be done when he can find time at the end of the year, such as examining carefully his sources of supply, improving the store appearance if he can afford it, keeping in personal touch with his customers, studying trade information to determine trends, figuring on improved selling techniques, preparing a balance sheet, and making a profit and loss statement.

Not all of these activities will have equal weight at any one time in a managerial program. Their relative importance will depend largely on the type of business being operated. When a man no longer has the time to do all these things himself, he needs help. He should get as many additional part-time or full-time employees as he needs and no more. He should not neglect the obvious precautions dictated by common sense.

Never Get to the Edge of Your Map

In World War I, a number of tanks were being deployed across terrain which had been carefully charted in advance. Each tank leader carried a map and maneuvered his tank in accordance with orders based on that map. The operation proceeded as scheduled with the exception of one tank which, at some considerable distance from the beginning of the movement, came to a stop as though taken out of action. No visible cause was discernible to account for the failure of this tank to continue the action. An orderly was dispatched to the scene. Upon arrival he found a perplexed man staring at a map. When asked why in blazes he didn't move up with the others, the tank leader said, "I got to the edge of my map and I didn't know what to do next."

Perhaps no better advice could be given to those who want to start their own business than, "Never get to the edge of your map."

W. F. S.

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CANADA. In Canada, control of education is vested in the governments of the nine provinces. The development of vocational guidance, so far as schools are concerned, has varied from province to province. Formal recognition and direction of vocational guidance by provincial departments of education is, with one exception, a development of the last ten years. The provinces of British Columbia, Saskatchewan, Ontario and Nova Scotia have provincial directors of guidance. Manitoba has a provincial guidance bureau. The other four provinces, Alberta, New Brunswick, Quebec and Prince Edward Island are in various stages of organizing guidance programs. So far as education of children and youth is concerned, the federal government's work in guidance has been largely confined to somewhat casual direction given in connection with the Dominion-Provincial Youth Training Program. Before the war this was practical training for unemployed youth and others who were not at school. During wartime this was continued as a war training program.

The history and development of vocational guidance in the provinces has been of a uniform pattern. Influenced greatly by development in the United States, an enterprising school board, teacher, principal or superintendent began introducing vocational guidance into a local school or community. This move was often stimulated by the interest and work of service clubs, welfare agencies, mental hygienists, industrial leaders, and of professional educators in teacher-training institutions. Development has been due to leadership of enlightened individuals backed by an increasing concern for vocational guidance on the part of the general public.

From the first there has been in Canada evidence of two points of view with respect to vocational guidance. One school of thought regards it as merely occupational guidance and stresses job analysis, the provision of occupational information and the placement of the individual in a job suited to his capacities and interests. The other school of thought, influenced by the mental hygiene viewpoint, thinks of guidance as adjustment and development. It is interested in personal and social, as well as health and recreational guidance. Its aim is to fit the pupil not only to make a living, but also to live.

Its objective is not merely to fit the pupil as he is to a job, but, by promoting his social, emotional and intellectual development, to enlarge his choice of jobs and his enjoyment and efficiency in them. The trend among educators, in Canada, would seem to be somewhat toward the latter point of view. The general public holds largely to the former. Public programs often begin with the occupational point of view and later, as part of vocational guidance, come to include personal, social and recreational guidance.

The following is the history and present stage of development of guidance in the school systems of the nine Canadian provinces.

In Canada's most populous province, Ontario, stimulus to vocational guidance came from the formation of the Ontario Vocational Guidance Association in January, 1935. This association, composed of approximately one hundred individuals interested in many phases of guidance, has been a positive force in stimulating the study and development of vocational guidance not only in Ontario but throughout Canada. The cities of London and Hamilton, as well as a number of other centres, established guidance departments in their schools. The result of these early experiments was the appointment of a provincial director of guidance in 1944, and more definite provision for courses in guidance in the provincial curriculum. Beginning in 1944 there has been a rapid growth in communities carrying on guidance programs in this province. In 1943 a vocational guidance centre for the distribution of tests and other guidance material was established by the National Committee for Mental Hygiene (Canada). This centre has been taken over by the Ontario College of Education and functions in close cooperation with its bureau of educational research. Vocational guidance in Ontario has been furthered by special work done by the Y.M.C.A., industrial concerns and the departments of psychology and education in the universities of the province.

In Quebec, Canada's French province, education is divided provincially into Protestant and Roman Catholic sections. There are virtually two departments of education. Guidance has been stimulated, rather than directed, by the central authorities. The school board of the City of Westmount has been a pioneer in this field and has had a director of guidance for some years. In 1944 the National Breweries, together with the Department of Psychiatry at McGill University, sponsored a series of lectures on "Human Behavior in Relation to Industry" and another series in 1945. The Psychological Association of Quebec has established a section of vocational guidance. The French Vocational Guidance Association and the Federation of Jewish Philanthropies have also interested themselves in vocational guidance. At present, guidance is being promoted by progressive individuals, professional associations and school boards rather than being actively promoted by the central authorities.

In the province of Nova Scotia, development, which has taken place chiefly in the last eight years, has followed the path of local and individual interest followed by official action. Courses in vocational guidance were offered at the Nova Scotia summer school for the last two or three summer sessions before the war. In 1941, the provincial Department of Education began a series of weekly radio broadcasts on vocational guidance, and in 1942, the first local director of vocational guidance was appointed for the city of Halifax schools. In 1943, a provincial director of educational and vocational guidance was appointed. The approach is to interest communities in occupational guidance first, and then to broaden the concept to include personal and social guidance. In addition to the stimulation of guidance given by the provincial director, leadership has also been given by members of the staff of the Nova Scotia Technical College and other professional educators.

In Canada's smallest province, Prince Edward Island, vocational guidance is just being born. Prince of Wales College is now engaged in developing a guidance program under a staff member who has had training in the United States. The College serves as the higher secondary school for this small province.

In the province of New Brunswick, the St. John Vocational School now has a vocational guidance officer. Eight composite high schools give guidance in an informal and incidental manner. Some guidance is also given by the Director of Vocational Education and his officials. In general, the work is not yet centrally promoted and directed by the provincial Department of Education.

In the province of Manitoba there was established, in 1938, by the Department of Education, a Guidance Bureau to provide occupational information, and encourage individual counselling, as well as to promote study groups to introduce guidance techniques in the schools. As a result of this stimulation, a number of principals, teachers and school boards have interested themselves in studying and inaugurating guidance work. A joint committee of teachers from the city of Winnipeg and suburban areas has presented a report suggesting a program of guidance in junior and senior high schools. In some centres outside of the city of Winnipeg, preliminary work in guidance has already been undertaken and groups of teachers are studying the program. In Winnipeg a start has been made in guidance and counselling in junior and senior high schools, but has not yet developed into a comprehensive and well-integrated plan.

In the prairie province of Saskatchewan, guidance received official recognition in 1944 when the Department of Education created a new branch under a Director of Guidance. The first guidance classes in Saskatchewan were organized in the city of Saskatoon in 1937. At first these were confined to classes in personal and social guidance in Grades IX and X in one high school. In 1943, the High School Board instituted a program of guidance in all the high schools. The cities of Regina and Moose Jaw have also inaugurated guidance in their high schools. Outside the larger cities, guidance is somewhat sporadic in character, depending on the interest and training of individual teachers. Considerable stimulation to the development of guidance has come from the College of Education of the University of Saskatchewan. In 1940, a summer course in vocational guidance at the graduate level was offered. Guidance has been stressed in a number of other courses, the broad point of view of guidance being the one taken.

The province of Alberta has included in its program for some time a section of social studies on vocations and guidance. Recently the Department of Education decided to take steps to revise its curriculum in guidance and make the program compulsory for every intermediate and high school in the province. Several of the local communities have been working on guidance for some time. The School Board of the city of Calgary, in 1942, brought a special lecturer from the United States to give a summer course in vocational guidance to its teachers. Summer courses have also been given at the provincial summer schools. Alberta is moving from the sporadic and casual handling of guidance to a planned and integrated program.

The west-coast province of British Columbia has been a pioneer in guidance. In 1927, work in guidance and the appointment of vocational counsellors was given official sanction in the program of studies issued by the provincial department of education on the occasion of the inauguration of junior high schools. Definite provision for guidance in the curriculum was made in 1937. At this time, one period a week of group work was prescribed, and detailed plans for individual counselling and various guidance records were outlined. The program of studies outlined in detail, in one hundred and ten pages, the topics to be discussed in the weekly periods, and made plans for a guidance system which would extend over the six years of secondary schooling. A special feature of the organization outlined is the close relation maintained between guidance and all co-curricular activities. The program of studies states, "The aim and object of this guidance program may be expressed in the words 'purposeful living.' Purposeful living is intended to include happiness, service in the community, correct attitudes in group relationships, orientation according to ability and aptitudes in the school program, and exploration of occupational fields. It includes also the conscious realization of the need for gainful use of leisure time." This statement is representative of the broad point of view in Canadian guidance. A provincial director of guidance was appointed in British Columbia in August, 1944. Previously a provincial division of tests and measurements had been organized in 1938. The city of Victoria, in 1941 established a placement department which was primarily concerned with occupational counselling and job placement. In 1943, all the guidance services of the city were placed under a Director of Guidance and Placement. A department of child study was organized in 1941. In the city of Vancouver there were early attempts to solve the problem of vocational guidance. A Director of the Bureau of Tests and Measurements was appointed in 1927. Previous to that, there had been appointed at various times officials in charge of pupil adjustment and pre-vocational classes.

Guidance in the schools of Canada is handicapped by five factors. (1) The lack of trained personnel—only a limited number of teachers, principals, inspectors and superintendents have sufficient training in tests, measurements, in the technique of counselling and in psychology generally to do more than indifferent work in this field. During the war this was aggravated by the necessity of employing a large number of immature and inadequately trained teachers. (2) The large number of rural schools where teachers change from year to year, and where it is difficult to carry out any consistent policy of guidance even if the personnel were trained to do so. (3) The lack of provision by school boards for definite time for guidance and counselling activities. It is often expected that these services be carried on in spare periods or after hours. (4) Lack of the necessary equipment and facilities for guidance—tests, counselling rooms, libraries, etc. (5) Lack of understanding by the public of the nature and importance of guidance. This is in part being remedied as Home and School Associations (Parent-Teacher Associations) grow in numbers and as they study this problem.

Systematic guidance in Canadian universities is in its infancy. In 1944 no Canadian university had a trained guidance officer though several had Deans of Women who were doing some guidance. Usually the counselling of students is carried on without much help from modern aids and without formal training on the part of those who guide students. Guidance, in Canadian universities, is apt to be looked upon with disfavor by members of the departments in the college of liberal arts, particularly by staff members trained in British universities. Opposition to guidance would appear to be stronger in universities than elsewhere. The staff of the University of Alberta has made a serious attempt to study the problem and to make improvements in their system of guiding students. In general, guidance work at Canadian universities is not well coordinated, nor are the services of professionally trained workers available.

During World War II personnel selection and other forms of guidance have been developed in all branches of the Canadian armed forces. Canada was slow to adopt definite measures of this kind. The Canadian Psychological Association was preparing for the use of tests and psychological service even before the outbreak of the war. Not till the third year of Canada's participation in the war was the Department of National Defense convinced of the usefulness of these services. In the fall of 1941 personnel selection in the army was organized under the direction of a top-ranking psychiatrist and a top-ranking psychologist. This service has grown steadily in prestige and effectiveness and is now well-established. A similar service was established in the air force, which, in Canada, is a separate branch of the armed forces. Not until September, 1943, was personnel selection established in the Royal Canadian Navy. Personnel selection is now working in reverse in vocational guidance for members of the armed forces about to be discharged. Because of the large number of young men in the air force, the vocational guidance service provided for those being discharged has been particularly vigorous. Nothing that has happened in Canada has given vocational guidance such an impetus as its use in the armed forces. Unfortunately the effectiveness of personnel selection has been limited by the necessity of using as personnel officers many whose training has been quite inadequate.

Vocational guidance has, because of the war, found a place in Federal governmental services, particularly in connection with rehabilitation and employment services. The Department of Veterans Affairs, in the administration of the rehabilitation program of the Canadian government, conducts certain types of vocational guidance in connection with its Training and Re-establishment Credits Branch. To do this, it has appointed and trained occupational counsellors. These constitute the counselling staff of the Veterans Rehabilitation Centres which are located in key centres across Canada. Occupational placement, except for the disabled, is a responsibility of the Employment Branch of the Department of Labor. This is being greatly extended and will also function in key centres.

The establishment of these vocational guidance services by the federal government raises the question of the relationship of vocational guidance bureaus to the services offered by the schools. There is considerable feeling among educators that, so far as the vocational guidance of secondary school pupils goes, the school is in a much better position to give such than any bureau which the pupil might visit for an afternoon for counselling purposes. This view is held not only by those who take the broad view of vocational guidance, but also by others who feel that the school has the facilities to collect all sorts of data on personal factors not revealed by tests.

Vocational guidance in industry was rather sporadic before the war, but has been given considerable impetus by the personnel selection work carried on in the armed services. Many industrial firms have sought the services of those who had personnel training in the armed forces and who have been discharged.

Vocational guidance in Canada may be said, then, to be in its early stages of development. The trend is toward a great increase in vocational guidance services in schools, industry, military and government services. The present popularity of guidance is fraught with considerable danger to its development. Large numbers of those engaged in personnel work have little background for their work. They have little real knowledge of the basic needs and adjustment mechanisms of human beings. They know little of the available knowledge regarding the nature of human abilities. They use tests without enough background to interpret them in wise fashion. They have not had adequate training in counselling.

In general, Canada is more conservative in its educational ideas than the United States. It is inclined to use the latter as an experimental station and to follow educational procedures which have established themselves in that country.

S. R. L.

CAREERS CONFERENCE, SCHOOL. A meeting or series of meetings for the discussion of occupational and guidance information and problems in which successful men and women are asked to participate and to make available to students their intimate knowledge of the requirements and opportunities in their particular field of work.

Other Terms

The school career conference is referred to in the literature on occupational guidance by a variety of titles. Some are Vocations

Day or Careers Day or Occupations Week or Month depending on the length of time planned for the events. Vocational Guidance Clinic Day, Opportunity Day, and Vocational Conferences are other terms sometimes used. The school career conference, however, is not to be confused with the Careers Day, Week or Month which some schools plan and center around the school library. For these events are displays of selected books, magazines, posters and other printed materials on the subject of vocational guidance coupled with a planned program of "browsing." The emphasis of the school careers conference, however, is on the conference idea with successful men and women presenting the various aspects of their life work according to a previously prepared outline of topics to be discussed. These people are usually available for individual conferences and interviews following the more formal presentations.

Early References

Little appears in the literature on the subject prior to 1917. In fact, early references under the classification of Vocational Guidance as far back as 1880 to 1900 deal with the topic of occupational balance and distribution as related to mortality statistics. In the early 1900's references are to hereditary callings, and "masculine and feminine" occupations rather than considerations of individual and personal qualifications for particular occupational fields, which characterize the emphases in the so-called career conferences.

Origin and Development

The plan seems to have originated in colleges and universities under the name of Vocational Conferences. The Intercollegiate Vocational Guidance Association organized in 1917 under the leadership of Catherine Filene (now Mrs. Jouett Shouse) had as one of its purposes "the holding of collegiate conferences annually on college campuses to discuss with leaders in the business and professional world opportunities for the college trained girl." Two such conferences were held at Wheaton, one at the University of Pittsburgh and one at Cornell. At a number of institutions vocational conferences which varied in length from a day to a week were held once a year. They seem to be more popular at the women's colleges than at the men's. The chief drawback under the conferences held once a year lies in the fact that it tends to be inspirational rather than factual as Maverick has pointed out. As early as 1921 their value seems to have been questioned by a writer in the field of guidance who asks, "No doubt vocational conferences are better than nothing, but why stop at such pseudo-solutions?" This critical observation came after it was noted that the attendance was only about half the student body at the conferences and the suggestion came that this type of knowledge ought to be incorporated into courses in the curricula. From these early beginnings in the colleges and universities of the country the idea seems to have spread to secondary schools. Possibly because the vocation conferences at the college level dealt largely with opportunities for college trained men and women, the early school career conferences in the public schools tended to restrict the topics covered to the professional types of training requiring a college education. These conferences have been later expanded to cover the whole field of vocational life. There has tended to be, also, the practice of using a carefully prepared outline of the aspects of a vocation to be discussed, which outline is usually discussed in advance with the speaker so that he is prepared to present the salient facts of his occupation. An example of such an outline is given herewith.

A. History of the occupation
  (1) Beginning of the occupation
  (2) Steps in its development
    (a) Rate of development
    (b) Nature of development
  (3) Factors contributing to the present status of the occupation

B. Importance of the work
  (1) Extent of contribution to social welfare
  (2) Considered as a necessity or luxury

C. Nature of the work
  (1) Description of the types
  (2) Outline of the day's work
  (3) Report of detailed analysis

D. General working conditions
  (1) Steadiness of work (seasonal or regular)
  (2) Number of hours per day
  (3) Extent of unionization of the vocation
  (4) Vacations and lay-offs

E. Remuneration
  (1) Estimation of wages per day, week, or month
  (2) Beginning wage and increase
  (3) Social remuneration (recognition)
  (4) Standard of living possible in occupation

F. Opportunities associated with occupation
  (1) Extent of increase or decrease in the need for worker's preparation for better occupation
  (2) Extent of opportunities for learning while at work
  (3) Opportunities for advancement (line of advancement)
  (4) Training applicable to other occupations

G. Effect on the worker
  (1) Moral-social-civic
    (a) Moral and social contacts in the occupation
    (b) Effect on social disposition, attitude, and personality
    (c) Relations of occupation to citizenship
    (d) Effect on home life
  (2) Physical and mental
    (a) Effect on health
    (b) Extent of hazard
    (c) Energizing or enervating work

H. Preparation
  (1) Formal school training
  (2) Apprenticeship
  (3) Helper method
  (4) Factory and store schools
  (5) Study needed for advancement

I. Personal qualifications desirable for success.
J. Advantages (distinctly designated as advantages)
K. Disadvantages (distinctly designated as disadvantages)

Organization and Management

The organization and management of the school career conferences seems to have taken two divergent trends. In most instances the school guidance staff or placement and guidance counselors and lay groups, sometimes including service clubs, meet and plan the series of meetings. This adult group works out an acceptable outline for all speakers to follow, selects the speakers and topics and otherwise organizes the whole program. An approach which is not so common but one which has merit seems to be the student-planned career conferences in which selected students from the various fields of occupation training in the school discuss the problem with other students majoring in their fields, select topics for the conference, plan the programs, engage the speakers, and otherwise organize and manage the whole conference. With some adult leadership provided by the school this would seem to safeguard the inclusion of all types of vocational areas and the factual nature of the vocational information presented as adequately as does the first plan. It would seem to offer, in addition, more developmental outcomes, and provide job contacts for the students under the student-conducted basis.

Variations of the Career Conference

One of the criticisms of the school career conferences, in addition to that mentioned above, regarding its inspirational rather than factual basis, seems to be that the main emphasis is put on information about the world of work leaving the student to supply the information about himself in relation to the world of work and the fitting of the two into a complete picture. A variation of the conference idea which brings into account the individual students' own capacities and interests along with the information about the occupational world is the camp conference. This was tried first by the Stevens Institute of Technology in 1931. The camp faculty is made up of successful industrialists and business leaders together with the school organizers who plan a summer camp program of lectures on occupational opportunities in the fields represented by the outside speakers. This conference schedule is accompanied by a program of aptitude, interest, and personality testing for each student aimed to reveal the abilities and interests in the vocational fields. Conferences with the outside men are arranged. Interviews and interpretations with the school counselors help to bring together the information which students gain from the vocational conferences about the world of work and their own abilities as they relate to these opportunities. Its application is limited to smaller numbers, and is more expensive to operate.

Another variation has been to set up the vocational conference days in connection with the vocational education or training program of the school. For example, the department of business or technology, as the case may be, may arrange to have speakers from the vocational field for which the department is training meet with individuals and groups of students already majoring in this line of work. This seems to remove the evangelistic aspect of vocational conference days which may tend to inspire students into choices for which they are not prepared or suited.

Another variation consists of scheduling a career conference over a week's period rather than having it concentrated in one day. By this process a student can have the opportunity of attending several conference meetings and make a comparison one way or the other, whereas with the program all presented on the schedule of one day, or even during one assembly period as some schools have scheduled it, a student must choose between several possibilities. One school has tried the scheme of requiring and scheduling each student for three such conferences with interviews following.

Considering all of the many variations of title, form, and management of the school career conference they all seem to have one common basic objective, namely, the imparting of occupational information. Making due allowances for the inspirational values and up-to-the-minute character of the information which speakers fresh from the field can bring to such conferences, the school career conference can hardly be more than supplemental in value to a systematically planned emphasis on imparting vocational information through the school curriculum by means of special occupations courses and throughout every course in the school offering.

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A. M. T.

CATHOLIC SCHOOLS. Vocational guidance in the Catholic Church dates back to the early days of Christianity. Many early writers in the newly formed church concerned themselves with the problem of the vocation of the priesthood. In this connection the term "vocation" referred to a special "calling" or purpose in life. Some of the writers ascribed this "calling" as coming direct from God basing their opinion on Paul's statement in his letter to the Hebrews Chapter 5:4, "No man takes the honor to himself; he takes it who is called by God, as Aaron was."

In succeeding centuries considerable confusion arose out of the diverse types of "callings" or "vocations" that appeared among the laity of the Church. In 1568, during the deliberations of the Council of Trent the Pope had a catechism written for Pastors which defined the ecclesiastical "vocation" as an official call from a Bishop representing the Church to some religious work in the Church. Vocational guidance became a consideration of the abilities, background and desires of the person seeking the "calling" or "vocation."

The term "vocation" has come to refer also to the choice of one of three states of life. These states of life were the religious life, marriage and "single blessedness." Vocational guidance under this meaning of "vocation" became a presentation of the requirements, conditions of life, and benefits of each of the three states of life. This is still one of the major aspects of vocational guidance for Catholics.

The third meaning of "vocation" is a more recent interpretation of the term as meaning that occupation to which a person devotes half or more of his working hours. Catholic interest in vocational guidance under this meaning of the term parallels that of other educators. The Proceedings of the National Catholic Education Association, founded in 1903, indicate that vocational and educational guidance was considered an integral part of the educational program of the Catholic schools and colleges. As early as 1905, there were papers devoted to the discussion of prevocational courses, differentiated curricula and guidance. Bishop Hugh Boyle of Pittsburgh, Pennsylvania was one of the first speakers in the field. Subsequent issues of the Proceedings of the Association include numerous papers on different aspects of guidance. In 1919 Rev. John O'Grady of Catholic University read a paper on "Vocational Advisement" in which he advocated the development of diocesan counseling bureaus including testing, placement, vocational tryouts, evening vocational classes and cumulative records.

In 1918 Sr. M. Jeanette Roesch, O.S.B. completed the first extended Catholic study in the field. She wrote her doctoral thesis on "Vocational Guidance of Catholic Youth at Catholic University of America." In 1921 Miss Sara E. Laughlin was appointed Parish School Counselor for the Philadelphia Diocese in which position she has continued to function. About 1927 a Vocational Counsel Section was established in the office of the Archdiocesan Superintendent of Milwaukee, Wisconsin. Professor Horace A. Frommelt of Marquette University was made director. He trained representative teachers from each of the schools to carry on the guidance work and instituted the collection and use of vocational data in the diocesan schools. In 1928 the superintendent of schools in the

Diocese of Pittsburgh initiated a guidance program in cooperation with the State Department of Education.

These early ventures in vocational guidance were followed by many others. In 1934 Sister Teresa Gertrude Murray O.S.B. made a national survey of "Vocational Guidance in Catholic Secondary Schools." She found that about 50 percent of the Catholic high schools had made provision for vocational guidance and an additional 10 percent reported informal guidance.

The writer in a study (1943) of Catholic Women's College catalogues found that general statements regarding guidance facilities were made by 35 percent of the Catholic Women's Colleges. Courses in guidance were listed by 45 percent of the colleges and placement of students was mentioned in 28 percent of the college catalogues.

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E. A. L.

CENSUS DATA, USE OF. In helping individuals to choose their occupations, a counselor needs as much information as he can get about opportunities for employment in each of the most important occupational fields. He needs to know the approximate number of workers employed in each occupation, the trend of employment in each field, the unemployment rate, and something about the kinds of persons who are employed in the occupation. Census tabulations are important sources of information on these subjects.

The number of persons employed in the occupation is especially important as it largely determines the number of jobs that are likely to become vacant during a given time because of promotions and retirements. In a large occupation, with many workers employed, replacement needs are likely to provide more job openings than will be available in a small occupation, even though the number employed in the small occupation may be increasing rapidly. The counselor needs to know not only the number employed in the occupation in his own locality, but also the number employed in the whole United States, in order to evaluate fully the potential opportunities for employment of an individual in that line of work.

The reports of the 1940 census show the number who were employed in each of 451 occupational groups and 132 industry groups at the time of the census, for the United States, for each State, and for each city of 100,000 or more population. In addition, they give abbreviated statistics for counties and for small cities and towns, showing employment according to 12 major occupation groups and 45 industry groups. ("Industry" groups are classifications according to the type of business or industry in which the person is employed, whereas "occupation" groups are classifications according to the kind of work done.) The statistics for States and for large cities are contained in the third series of Population bulletins of the 1940 census, entitled "The Labor Force," one of which is available for each State, with a summary bulletin for the United States. The data for counties and smaller cities are given in the second series of bulletins for each State, entitled "Characteristics of the Population."

In the United States, up to the present time, the census of population has been taken only once every ten years so that it has not been possible to keep the occupation statistics up to date at all times. For most occupations, under ordinary conditions, the number employed at the time of the latest census is a good enough approximation to current employment for purposes of vocational counseling, but in some cases there may be large changes since the census date. Since 1940, for example, there have been large changes in the numbers employed in many occupations, especially in certain centers of war industry. The counselor should therefore use the census figures in conjunction with all available information on recent changes in employment, for the nation as a whole and for his locality.

One source of current information on employment in different occupation and industry groups is the Census Bureau's Monthly Report on the Labor Force. This is a nation-wide sample survey which gives monthly estimates of employment and unemployment for the country as a whole and quarterly estimates of employment by major occupation and industry groups, on a national basis. The estimates by occupation and industry groups are not published but can be obtained upon request from the Director of the Census, Washington 25, D. C.

Past trends in the occupational distribution of employment give some indication of the changes in opportunities for employment in each line of work that can be expected in the long-run future. The census reports on occupations for 1940, 1930, 1920, and earlier census years give valuable information about these trends, but their use is complicated by the fact that the statistics from the different censuses are not exactly comparable. The difficulty is due chiefly to the changes which have been made in the system of occupational classification for different censuses. One of the 1940 Population census reports, entitled "Comparative Occupation Statistics for the United States, 1870 to 1940" explains the differences in classification and gives estimates of the number of workers in each occupation and industry group on a comparable basis for different census years. No use of census data for the study of occupational trends should be attempted without reference to this report. The report gives estimates only for the United States as a whole but information on occupational trends for a given State or large city can be obtained by using this report in conjunction with the volumes on occupations in the reports of the 1940, 1930, 1920, and earlier censuses.

The danger of unemployment for workers in any given occupation cannot be determined directly from census data. It depends partly on the relationship between long-run trends in demand for labor and labor supply in that occupation, partly on the effect of general prosperity or depression upon employment conditions in that line of work, and partly on the seasonal variation of employment, as well as on such accidents as technological innovations and shifts in fashions or consumers' tastes. In any particular locality, the risk of unemployment is further affected by local circumstances such as population growth or decline and possible changes in the number and types of industries located in the community. Census figures can only measure the rate of unemployment in each occupation at the particular time when the census was taken. These measures, however, give a rough indication of the differences in the incidence of unemployment among workers in various types of occupations which might be expected under depression conditions similar to those which existed at the time of the census. The 1940 census reports show how many workers in each occupation and industry group were seeking work at the time of the census, and a classification by amount of employment in 1939 for each industry group. These figures, for the United States as a whole and for States and principal cities, are contained in third series Population census bulletins, "The Labor Force."

Data on the personal characteristics of workers employed in each occupation are valuable as indications of employment prospects for different types of individuals. For example, the number of women employed in a given occupation, relative to the number of men, gives some idea of the amount of difficulty which a woman may face in getting jobs in that occupation. The classification of the workers in each occupation by number of years of school completed indicates the general level of education that is usually required for employment in that kind of work. The classification by age is valuable for similar purposes and also as an indication of the number of replacements that are likely to be needed in each occupation within a given future time period. Statistics for workers in various occupations classified by sex, age, race, and marital status for females are given for States and principal cities in the third series of 1940 census bulletins on Population, "The Labor Force." The same bulletins give statistics for industry groups by sex, age, and race. National and regional statistics on education of workers in different occupations, together with additional details relating to age and other personal characteristics for both occupation and industry groups, are contained in the 1940 census reports on The Labor Force (Sample Statistics), "Industrial Characteristics" and "Occupational Characteristics."

For a fuller discussion, including summaries of census data and examples of their use in vocational counseling, see *Occupational Data for Counselors,* prepared by the Bureau of Labor Statistics in cooperation with the United States Office of Education (Bureau of Labor Statistics Bulletin No. 817). Copies of this bulletin and of the various reports of the 16th Decennial Census of Population (1940) which have been mentioned above can be obtained at nominal prices from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

J. D. D.

CHEMISTRY ACHIEVEMENT TESTS

Kirkpatrick Chemistry Test

General Statement

The Kirkpatrick Chemistry Test was constructed for use as an achievement test in high school classes pursuing work in first year chemistry. Forms A and B of Test I are equivalent in content and form and are designed for use at the completion of one semester's work. Forms A and B of Test II are equivalent forms designed for use at the completion of the first year's work. This test covers definitions, formulas, equations, principles, theories, and problems.

Authors and Publisher

The authors of the test are E. A. Kirkpatrick, Inyokern, California, and H. E. Schrammel, Director, Bureau of Educational

Measurements, Kansas State Teachers College, Emporia, Kansas. The publisher of the test is the Bureau of Educational Measurements, Teachers College, Emporia, Kansas.

Validity of Test

The content of this test is based on the common content of leading textbooks and courses of study. The specific items, as well as the general content, were subjected to the criticism of chemistry teachers and supervisors. Research studies on textbook content and student success on various parts and items were also utilized for determining the subject matter to be covered.

In a study of the scores of 111 students who were pursuing chemistry courses in secondary schools a correlation between semester school marks and scores on Test II, form A, yielded a coefficient of validity of .68 ± .03. Between the semester marks of the same group and scores on Test II, form B, a coefficient of .72 ± .03 was obtained.

Reliability of Test

Several studies in regard to the reliability of this test were made. Test II, form A, by the split-half method yielded a reliability coefficient of .90 ± .01. By the same method Test II, form B, yielded a coefficient of .82 ± .03. Between scores made on Form A and Form B, of Test I a coefficient of .73 ± .03 was obtained, and on Test II the coefficient was .83 ± .02. The average P. E. of measurement was 4.2; the average P. E. of the median was .33.

Directions for Giving, Scoring, and Interpreting

The test is practically self-adminstering. Scoring is accomplished with ease with a printed objective key. Percentile norms are provided for interpreting the results both for mid-year and end of year testing. Forty minutes is the working time for each division.

Use of Test Results

It is suggested that the test results may be profitably used in a number of ways: for determining student achievement; for checking the efficiency of instruction; for assigning school marks; for analyzing student and class weaknesses; and for motivation of student effort.

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H. E. S.

CHINA

Vocational Education. Modern education in China is a development of the twentieth century. The first system of modern schools was introduced in 1902, and the traditional system of competitive examinations for degrees and public offices was not abolished until 1905. Emphasis on modern vocational education came some years later, and plans and programs of vocational guidance represented an even later development.

Although the old examination system was abolished in 1905, the old psychology did not disappear so quickly. The new education was to many people merely another way of gaining entrance into officialdom. The new schools were considered a gateway to a white-collared life relieved of all forms of manual labor. The literary tradition of the old education was transferred to the new, so that the content of the latter was still far removed from the practical demands of life. There were not enough official and white-collared jobs for all the products of the new schools, and unemployment became the most serious problem confronting the graduates.

It was at this time that the movement for vocational education got under way. The movement, gaining momentum in the early years of the Republic, was given impetus by the realization of the economic needs of Chinese society and the demand for a type of education that would help ameliorate the economic livelihood of the people.

National Association of Vocational Education in China

The most important force in the promotion of vocational education in the early years of the movement was the National Association of Vocational Education, organized by a group of educators in 1917. Grieved by the inability of graduates of elementary and secondary schools to obtain employment and to make use of what they had studied, this group of educators declared that it was fortunate that education had not been universal; for universal education might have produced universal unemployment. In the promotion of vocational education, their main concern was to provide the type of education that would enable young people to secure adequate jobs. Today, claiming a membership of 20,000 individuals and 700 group units, the Association still remains the most influential professional body active in promotion, research, publications, and experimentation in the field of vocational education.

Vocational Guidance

The leadership of the National Association of Vocational Education was strengthened by the co-operation of such bodies as the National Association for the Advancement of Education. The importance of vocational education was stressed in national and provincial education conferences. It was soon evident, however, that vocational training was not enough. Students who had undergone training must be helped to secure the right jobs. Placement became a new responsibility that could not be avoided. Moreover, it was maintained that vocational education must not only provide the needed training for occupations but must enable the trainees to enjoy their vocations. This not only called for a broadening of the content of vocational education, but also brought to the fore the importance of guidance, counseling, and follow-up work.

The National Association of Vocational Education organized a special Committee on Vocational Guidance. Guidance bureaus appeared in industrial centers. Steps were taken to investigate the conditions of employment and occupational needs, to provide information, counseling, and placement service for the unemployed, to initiate personnel work in industrial organizations, and to spread information through lectures, articles, and books. A Vocational Guidance Week was introduced in a number of cities to arouse public and professional interest in vocational guidance.

Phases of Guidance

Theoretically speaking, the guidance program was comprehensive in scope and included not only counseling and placement, but also follow-up, testing, and research. Actually, placement has received more attention than the other phases of the program. With unemployment so prevalent that "graduation means unemployment" became a byword in education, the finding of jobs naturally became a matter of first concern to students and educators alike. However, leaders of the movement have from the beginning maintained that an effective guidance program must be based upon known facts about occupational needs and conditions of employment, and upon some knowledge of the interests and abilities of pupils. Surveys have been conducted to discover facts about the extent of unemployment, occupational opportunities in various fields, training opportunities available in different types of schools, and the kinds of abilities demanded for success in different occupations. Statistics and findings have been published in magazine articles and pamphlets.

Guidance bureaus and guidance committees of schools have gathered a good deal of personal data through interviews, information blanks, and questionnaires. Questionnaire studies have been made of the vocational interests of school pupils, their likes and dislikes, their reactions to school work and industrial life. Tests have been used, though not extensively. Valuable experimental work in testing and measurements has been carried on by scholars in the departments of education and psychology in colleges and universities. Achievement tests have been devised for various school subjects. Adaptations have been made of such mental tests as the Binet-Simon test, Goodenough's test of intelligence, the Porteus maze test, and others. For testing emotions, attitudes, and personality traits, some use has been made of the Woodworth-Cady-Mathews questionnaire, the Thurstone neurotic inventory and personality schedule, the Berureuter personality inventory, and other devices. What has been accomplished constitutes a promising beginning in putting the guidance program on a scientific basis.

Governmental Policy

After the establishment of the National Government in 1928, Chinese education came more and more under the centralized control of the Ministry of Education. The direction of education throughout the nation was guided by a series of educational laws. Anxious to stimulate the growth of vocational education, the Ministry ordered provincial and municipal authorities to increase their budget appropriations for vocational schools and took measures to prevent the increase of middle schools (of the academic type) to the neglect of vocational education.

The basic laws governing vocational schools promulgated in 1935 stipulate that each school should organize a special department or bureau charged with the specific duty of helping the graduates to find adequate jobs, and that the school should assume responsibility for follow-up guidance of graduates in their occupational activities. In the following year, the Ministry announced a list of criteria by which inspectors should be guided in the evaluation of vocational schools. Among the criteria are the establishment of advisory committees to take charge of counseling, the maintenance of close relations with industries, the specific provisions made for vocational guidance and placement, and systematic records of follow-up observations of graduates after employment.

An order of the Ministry in 1935 directed all provincial and municipal authorities to organize bureaus of vocational guidance and committees on vocational guidance. The scope of guidance was defined to embrace the choice of vocations, the change of vocations, employment, training, study, and entrance into higher schools. Registration, interviews, personal data information, and tests were recommended as methods of guidance. Besides, the provincial and municipal bureaus of vocational guidance were asked to promote research and extension work along the following lines: survey of occupations and occupational needs; investigation of available opportunities for further study and training; experimentation with mental and vocational tests; study of the relative ratio of occupational needs and available personnel for the particular occupations; assisting individual schools in their guidance programs; arrangement for holding in the locality entrance examinations for higher schools; lectures by leaders of various vocations.

Vocational guidance is stressed not only in the vocational schools but also in the elementary and secondary schools. An order of the Ministry, as early as 1933, dealt exclusively with educational and vocational guidance in elementary and secondary schools. Beginning with the fifth grade of the elementary school, the second year of the junior middle school, and the second year of the senior middle school, school authorities were instructed to make definite plans for counseling in further study or vocational preparation. Each school must have a guidance committee whose duty it is to gather data in regard to the economic and occupational status of the pupils' families, the occupational opportunities available in the community, and the abilities and interests of pupils. The committee is also expected to arrange special lectures by leaders of various vocations and to encourage the pupils to get acquainted with vocations through study and visits. Group orientation talks are recommended to supplement personal interviews.

It would be incorrect to leave the impression that the orders of the Ministry have been fully carried out in the schools and the localities. In a country traditionally so decentralized as China, centralized control could not be effectively instituted within a short time. The nation was just starting on its way to systematic educational reorganization when the war started in 1937. This summary of governmental policy is intended to show the trend toward which the nation was moving and the importance which has been attached to vocational guidance.

Educational Guidance

Educational guidance is closely related to vocational guidance. Three phases may be noted: guidance in transfer from one school to another or advance from one level to a higher level; guidance in the choice of studies; and guidance in personal problems and character formation.

The first type of guidance concerns those pupils whose immediate desire is to enter another school rather than a vocation. Guidance committees and bureaus have tried to assist such students by furnishing catalogues and directories and information in regard to the curricular offerings and relative merits of different institutions. Such information is much sought by high school students, who also appreciate the advantage of locally administered entrance examinations for out-of-town colleges and universities.

Guidance in the choice of studies is important for students in secondary as well as higher institutions, but the nature of the curriculum in the college or university, calling for definite choice in the selection of major fields of study and of courses within the chosen field, makes such guidance more imperative; therefore this form of guidance receives more attention in higher institutions. In some colleges, guidance is extended to include problems of adjustment to college life and functions through such media as Freshman orientation courses or orientation weeks.

Mention should here be made of an influence which greatly affected student choice and student interest in recent years: namely, the general trend toward more emphasis on the study of science and technology. The prevalence of unemployment of school graduates, the economic poverty of the nation, and an increasing realization of the need of science and technology in China's reconstruction all combine to emphasize this trend in Chinese education. The Ministry of Education took steps to limit the number of students to be admitted into the non-science departments of colleges and universities and to encourage the increase of enrollment in the science departments. Government grants were offered to develop the departments of science, technology, medicine, agriculture, and those branches of study that would have direct application for China's economic problems. Many more scholarships and fellowships were available for students of science and technology than for non-science students. As a result of this policy, the last decade has witnessed a marked growth in student interest in science and technology and a notable increase in the enrollment of science departments in institutions of higher learning.

Guidance in student life and character development has been given increasing attention in recent years. Every school has a committee on discipline and a director of discipline. As discipline became more and more a part of school administration, however, it tended to emphasize the negative aspect of dealing with misconduct and violations of school rules. Positive guidance was at a premium. To overcome this shortcoming, the Third Educational Conference in 1938 recommended a tutorial system as a means of furnishing guidance to every pupil. The system has been in effect in secondary and higher schools since that year.

According to the system, every teacher, in addition to instructional duties, serves as tutor for ten or fifteen pupils, to whom he is guardian and adviser on all personal problems. Theoretically, the system integrates the function of guidance with that of instruction and distributes the responsibility for guidance among all members of the teaching staff. The "tutor" is supposed to maintain close personal relations with the students under his guardianship; he meets with them in a group as well as individually. While the scope of guidance covers all the academic and non-academic problems of the student—studies, health, love, romance, family, finance, etc. —vocational guidance occupies a prominent place. The success of the system varies greatly with individual schools, depending on whether the faculty groups are really interested in guidance through personal contacts, or whether they merely carry out the mechanics of the system in a perfunctory manner.

Wartime Developments

China is fighting a war of resistance and reconstruction. There is urgent need for trained personnel to undertake the multitudinous tasks demanded by the war and the program of national reconstruction. In order to gear the program of education to the actual needs of the nation and in order to direct the talents of the nation to the opportunities and services for which they would be best suited, the Ministry of Education organized in 1938 the Reconstruction-Education Co-ordination Committee, with representatives from the Ministries of Education, Interior, War, Finance, Economics, Transportation, and the Aeronautical Affairs Commission. Later on, representatives from the Ministry of Agriculture, the Ministry of Social Affairs, and the National Relief Commission were added. The Committee was charged with the duty of studying the specific needs for specialized and technical personnel in different phases of national life, of suggesting educational changes to meet such needs, and of assigning trained personnel to adequate jobs.

Shortly after its organization, this Committee established a bureau for the investigation and counseling of professional and technical personnel. The bureau has been concerned with (a) survey and registration of available personnel in different fields of specialization, (b) investigation of personnel needs in factories, industries, and various branches of national life, (c) placement of those not yet employed, (d) guidance in further study and training, (e) information and counseling on employment opportunities.

Under the direction of the national Committee, provincial and municipal authorities have organized local committees to co-ordinate education with reconstruction. Recommendations have been made by the national and provincial committees to modify the educational program or to inaugurate new training programs to meet the actual needs of local and national reconstruction. The committees try to keep in close touch with the changing demands for trained personnel in various agencies of reconstruction and with the number of students graduated each year from the various schools. The co-operating Ministries are requested to furnish the Ministry of Education with estimates of the number of persons needed each year in the different fields of national reconstruction. Effort is made to co-ordinate supply with demand and to work out a planned program of education based on discovered needs. Thanks to the leadership of the Co-ordination Committees, new curricula and training facilities have been inaugurated in such fields as nursing, medicine, many branches of engineering, national defense, agriculture and forestry, transportation, mining, and reconstruction work in frontier provinces.

In the co-ordination of education with reconstruction, the employment of graduates of higher institutions receives particular attention. The Ministry of Education has made particular effort to help these graduates obtain the kind of employment that will enable them to render their best service. According to published reports, out of the 5,000 to 7,000 students graduated each year from higher institutions, the Ministry has in the past years found employment for 2,144 graduates in 1937, 2,413 in 1938, 2,812 in 1939, and 2,776 in 1940. For the benefit of those not able to obtain employment, the Ministry established a Pre-Employment Training Class for the purpose of providing guidance in the quest for employment, in the study of vocational problems, and in the preparation and adjustments necessary for occupational success. The Class is meant to be a remedial measure intended to furnish the guidance and counseling that the students should have been given before graduation.

Space permits only a passing mention of the wartime relief measures for homeless children, orphans, and pupils unable to continue their education. Relief is often provided in vocational training and placement after training. A certain amount of guidance is involved in arrangements for apprenticeship, in work-study plans, and in employment by crafts and industries.

Conclusion

The importance of vocational guidance has been stressed by Chinese educators and in the official policies of the Chinese government. Up to the present, the most urgent need has been to help people to find jobs, and placement has been given more attention than other phases of vocational guidance. Much remains to be desired in the development of a guidance program based on scientific knowledge and the use of well-constructed tests. Follow-up work and personnel work are still in their infancy.

Postwar China will witness a phenomenal growth in vocational and technical education. The prestige of the white-collared jobs has been badly shaken during the years of war, and manual work of different kinds now commands more respect and greater remuneration than before. Throughout the nation there is a universal conviction that China must industrialize and improve her agriculture by scientific methods. With the rise of industries and the growing demand for technology, the schools will be called upon to offer a wider range of studies and training courses. Pupils will likewise be confronted with a wider range of educational and vocational opportunities from which to choose. Such a situation will doubtless produce a greater demand for guidance and counseling. Significant developments in scientific counseling and systematic personnel work may therefore be anticipated.

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T. H.-E. C.

CHINESE-AMERICANS. According to the 1940 census there were 77,504 Chinese-Americans in the United States, nearly half of whom were foreign-born. Until 1943 the aliens were ineligible for naturalization, which undoubtedly retarded their occupational adjustment and reduced their occupational opportunity. At the same time that naturalization became possible, China was added to the quota list and the minimum quota allowance (105 per year) of immigrants are now admissible.

The peak of the Chinese-American population in the United States was 107,488 in 1890, which decreased to 61,639 in 1920, and then increased to 74,954 in 1930. Between 1930 and 1940 the Chinese-American population increased by only 2500, and the prospect is for a fairly stable population in the foreseeable future.

The three most striking attributes of the Chinese-American population, other than its small size, are its concentration, urbanization, and abnormal sex ratio. The bulk of the Chinese-Americans are located in California (39,556) and New York (13,731). No other state exceeds 2500. They are concentrated in a few cities of which the most important are San Francisco (17,782), New York City (12,753) and especially Manhattan borough (10,370), Los Angeles (4736), and Oakland (3201). No other city exceeds 2000. Ninety-one per cent of Chinese-Americans are urban and these are predominantly metropolitan. The rural population is chiefly non-farm. The sex ratio for the total population is 285 males per 100 females; for the native-born 177, and for the foreign-born 570.

The educational level of the native-born Chinese-American population is about at the median for urban non-white populations in general. On the average native-born urban Chinese-Americans complete the 7th grade and females attend school for about 2 years longer than do the males. These figures are based on the census analysis of the population 25 years of age and older. It is quite possible that the educational position of Chinese-Americans now of school age is somewhat better, but it is unlikely that short of a concerted effort to hold the pupils in the schools, their educational status will be sufficiently advanced to open up a new range of opportunities. The educational level of aliens has not been presented because the data do not lend themselves to concise interpretation and are of doubtful reliability. In any case, aliens are important here only in so far as they establish occupational patterns for their children. For their own part they are occupationally frozen.

There has been only a small persistence of the early occupational patterns. Very few Chinese-Americans can now be found in agricultural and unskilled railroad and gold mine work in which they entered the labor market in the 19th century. On the other hand, there has been some persistence of specialty jobs such as cooks in labor camps and, as noted, below, restaurant and laundry work.

Of 62,500 Chinese-Americans 14 years of age and older, 41,300 are in the labor force, and almost 10% of these were unemployed in 1940, perhaps due to the fact that children are prematurely introduced into the labor force. Eight per cent of the labor force are women, compared with 33% for the total non-white labor force. This, of course, may be attributed to the bias of the sex ratio and the resultant high bargaining power of Chinese-American females on the marriage market.

The population manifests a high degree of occupational specialization. On the East Coast they are concentrated in restaurant work and laundries. In the Southwest there are a considerable number operating grocery stores. On the West Coast they are somewhat more occupationally diversified where in addition to the restaurant and laundry workers, there are a large number of clerical and sales personnel, domestics, and small shop keepers. The last category is specialized in grocery stores, herb and curio shops, which are often collective enterprises of the extended family group. Apparently a higher proportion of native-born workers are in occupations, such as clerical and sales, which require public contact. After the evacuation of Japanese-Americans, the numbers of Chinese-Americans in the produce business sharply increased, but there is some question whether or not this is a permanent adjustment. The curio business, which was badly hampered by the interruption of trade with the Orient, may be rehabilitated with the resumption of shipping, although it is doubtful if the exploitative relationships with the Oriental labor market will ever be restored in pre-war form. Not even this much hope can be held out for the Chinese laundries which have for the most part failed to adjust to technological developments. Operating on the smallest margin the numerous hand-laundries have stubbornly remained in business in spite of their progressively weakening position.

It will be seen that the stereotypic attitudes toward Chinese-American jobs are not too far from the truth and the improvement of the status of the population depends upon a diversification of employment which in turn depends upon the breaking down of the ethnic enclaves. Under present conditions, varied occupational training is unavailable within the tightly knit communities. There appears to be little likelihood of increased intra-community opportunity for persons trained in the service professions. The general exclusion of Chinese-Americans from teaching positions will hold down the proportion of the population in the professions. Opportunities for a very small number of highly trained persons with linguistic skills may be sought in the field of foreign trade.

L. B.

CIVIL SERVICE. In extent of employment and variety of positions, the public service is second to none. In 1940 one out of every eight gainfully employed persons in the United States was on a public payroll. This represents an army of nearly five million persons, working in some 175,000 political jurisdictions from Maine to Hawaii and from Alaska to Porto Rico. Considerably less than half of this number are in the peacetime Federal service, the rest being employed by the states, counties, and cities. Their duties embrace a wide variety of occupational fields, many of them common to private employment, but some unique to the public service. In the former group are clerks, mechanics, and nurses; while in the "unique" group are found mail carriers, immigration officers, and lighthouse keepers.

Government activities are predominantly of the "service" type: protection and development of the national forests and parks—a Federal function; care of the insane, a state responsibility; support of the poor, mostly borne by the counties; and police and fire protection, provided by cities and townships. Except in certain rare cases, government does not engage in manufacturing, processing, or merchandising. But in spite of this limitation, the Federal government's list of jobs reads like a dictionary of occupational titles, and even a small city will have a range of positions, from anesthetists to zoological experts which would put to shame most large business enterprises. It is therefore evident that to speak of "government jobs" or "civil service positions" is meaningless from the standpoint of occupational limitation.

Changing Functions

In the early years of the Federal Civil Service, only the lesser government jobs were filled by competitive examination. But as the merit principle gained public acceptance and recruiting and examining procedures improved, more and more professional, technical, and administrative positions came within the scope of Civil Service. Today the old-time, underpaid civil servant who dozed on a high stool with a pen behind his ear is a vanished species; he has been replaced by the scientist and expert. The specialization which has come to industry in the past generation has also entered the expanding ranks of government, which has now invaded every field of human endeavor. The psychiatrist in the mental hospital, the forestry expert in the national park, the meteorologist at the airport, the FBI instructor in the police school, and the civil engineer who designs suspension bridges or superhighways are but a few examples of this specialization.

Another development of recent years has been the spreading out of all civil service commissions to embrace new personnel duties, particularly those involving control over the employee after he has received his appointment. These agencies reveal a transition from a "negative" to a "positive" approach to personnel administration in government. The early merit systems were born of a popular demand to end political abuses, and retain worthy employees regardless of what church they attended or how they voted. Today the employee's health, safety, training, promotion, guidance and discipline are sound adjuncts to the earlier functions of recruiting and examination. Whether in a vast enterprise like the TVA or in a city with only 100 employees, the modern personnel agency is charged not only with guarding public pay rolls, selecting the best people available, and insuring that every applicant has an equal chance, but also contributing to the growth, welfare, and security of its employees.

Comparison with Private Employment

The chief difference between public and private employment is not in the number and type of jobs, nor the qualifications and preparation for them. The two fields are remarkably similar in these respects. The standards of training and experience for the accountant in the City Hall are the same as for a good accountant anywhere. The differences lie rather in the method of their hiring, the relative urgency of their services, and the rigidity of pay, classification and retirement rules. Public service is more monopolistic, more necessary, more formalized and routinized than the other.

Cause and effect relationships are more apparent in public than private personnel practice because the former is necessarily so rigid in its procedures. Carelessly drawn specifications, which might admit poorly qualified people to an examination, cannot be corrected by cancelling it, or hiring better qualified people without examination. The law sets up a fixed framework, within which the agency's rules and regulations are operative. So step by step, from the original class specification to the examination plan; the formal examination announcement, with its stated salary, hours, duties, minimum training and experience requirements, and fixed closing date; the reviewing of applications; the mailing out of notices; holding the examination; the scoring and ranking of candidates; their eventual appointment—from all this there is no turning back. Once the wheels have been set in motion, public personnel administration grinds forward, too slowly sometimes, but always according to a pre-approved, unchangeable plan, to the end of the process. Since each step is open to appeal and legal review, each must be carefully guarded and carefully taken. The procedure seems cumbersome, but most of it is necessary. Demonstrable fairness must always be placed before expediency.

Advantages and Disadvantages

From the standpoint of the individual employee all this may be favorable or unfavorable. In general, young people, fresh from high school, trade school, or college, who know what careers they want to follow, and who start early to climb the civil service ladder, are most benefited. Even in the professions, there is a definite handicap for the man who enters public service in his later years. In private industry, such a man could take over administrative reins, or step into legal, medical, or engineering duties without handicap. But merit systems promote from within the ranks wherever possible, so that a highly trained professional man of necessity starts at the bottom level of his class, and must then serve a probationary period and await vacancies in the ranks above him. When these occur, it is true, any natural competence will take him to the next rung of the promotional ladder, regardless of whether he has the most seniority; but he may have to wait ten years for the opportunity to present itself. In private employment, this same professional man who showed unusual ability would be promoted over the heads of older men, or the latter demoted to make room for him. In general, therefore, youth is served, although it is also true that due to retirement provisions merit systems treat a faithful employee who has grown old in the service more justly than does private employment.

In the past the generalization could also be made that public service paid more at the lower levels, but less at the top. This latter is now being remedied. Whereas executive positions in public service used to have a ceiling of $5000 or $6000, World War II brought the realization that if government hoped to draft executive brains to head the many new functions a modern war demands, they had to pay $9000 to $10,000. Recent revised pay plans for the states and cities also reflect this trend, and indicate that the public realizes it can save tax monies by selecting good administrative talent, and paying it accordingly.

If security of position is a prime consideration, the advantages of public service outweigh the disadvantages. While talent may not be as quickly recognized as in private business, promotions not as rapid, salaries not as flexible or as high at the top, political activities prohibited, opportunities for investment lacking, and sales ability not proportionately rewarded in the aggressive person, the public employee comes into his own in the declining market, when lay-offs and wage cuts are the rule in private business. Since the public business must go on in good times or bad, and the number of people provided public services does not decrease, but increases during economic misfortune, the young man about to take on family responsibilities will give much weight to the guaranteed annual salary, provision for sick leave and regular vacations with pay, as well as the pension at the end of his career.

There is a popular misconception that public service jobs are blind alley jobs. This is false. A change of jobs is effected by either transfer to another office or even another part of the country, or competitive examination for a better job. As in private employment, more doors are open to college graduates than to those of less education, although they will be competing with other equally educated candidates for the better jobs. In fact, the more specialized the work, and the higher the pay, the more rigorous are the qualifications, and the keener the competition.

The public service also gives advantages not found in private industry to veterans, minority groups, and women. At all levels of government the veteran is given a generous advantage over the non-veteran in competition for employment, chiefly through the addition of preference points to his earned score on examinations, and the waiving of age and residence restrictions. While race and religious prejudice are as common among government employees as anywhere else, members of minority groups will find that the law provides a haven in the public service, and an opportunity for advancement that would not be possible in other fields. Women also may discover greater opportunities in public service, where merit is able to over-ride prejudice. There is no double pay standard; by law they must receive equal pay for equal work.

Extent of Merit Systems

The Civil Service Assembly of the United States and Canada, located at 1313 E. 60th St., Chicago, acts as a central clearing house and information bureau for public administrators and personnel technicians. From it may be obtained the names of all civil service agencies within any given area.

The states have lagged behind the Federal government in establishing merit plans, largely because of the resistance of entrenched political parties. As late as 1946, only half of the states had complete public personnel agencies. All but New York and Massachusetts had come in since 1905, so that most of the increase has been relatively recent. However, in all of the states there are at least a few public employees chosen on a competitive basis because since 1940 the Social Security Act has required the states to place their unemployment insurance and public assistance employees under a merit system.

The counties are even more poorly represented. Of the more than 3000 counties in the U. S. only a score have their own merit systems, although most of these are in counties of large population, such as Cook Co. (Illinois), Wayne Co. (Mich.), Nassau Co. (N. Y.) and Los Angeles Co. In several states, notably New York, Ohio, Maryland, and New Jersey, county personnel functions of certain counties or certain classes of county employees are administered or supervised by the parent state. Even with these partial converts, however, the counties, as usual the last citadel of political patronage, can boast only 5% of their number as having some sort of a merit system.

It is at the municipal level that most progress has been shown. While many small cities have not as yet enacted the necessary legislation, nearly every large city in the U. S. selects its employees through competitive examinations. As with the states, this growth has been most rapid in recent years. Beginning with none in 1883, there has been each year a constantly accelerating rise until by 1946 some 1000 cities operated under some sort of Civil Service.

Summarizing its extent at the state and local levels, it may be said that the merit principle is represented most strongly in the cities, next in the states, and most poorly in county government. However, because the more populous centers have some form of Civil Service, probably four out of five people today live in jurisdictions which hold merit examinations.

Where and How to Apply

Applicants for Federal Civil Service positions may apply at any first or second class post offices and at the 13 regional offices of the U. S. Civil Service Commission or their branches, as well as representatives in Hawaii, Porto Rico, Canal Zone and Alaska. (This list of branch offices may be procured from the U. S. Civil Commission at their central office at Washington, D. C.)

Applicants for state civil service jobs may apply to the Commission at its state capitol—*viz.*: Michigan Civil Service Commission, Lansing, Mich. Since the county is a state unit, there is often a sheaf of announcements tacked to the bulletin board of the Court House or County Building, enumerating openings and scheduled examinations.

At the local level, a phone call will provide information on the city or county merit system. Or better yet, a visit to the offices of the local agency will enable the vocational counselor to discover at first hand what jobs are filled by open competitive examinations at the induction level.

In most cases, residence requirements are as broad as the service. For a federal job, one need only be a citizen of the U. S. A., although many positions are now limited to the group of states (district) in which the examination is held. To be eligible for a state civil service position, it is necessary to be a resident of the state; for a county job, to live within the county boundaries, and for a municipal civil service position, to reside within the city limits. However, in the case of professional classes, or rare skills, or any job for which it is difficult to recruit, the local agency may waive its residence requirements, and make the examination state-wide or even nation-wide. These residence restrictions have a direct bearing on the relative opportunities of any individual. Thus, a youngster who lives in Los Angeles or New York has far more opportunity for public employment than one who lives in Charleston, S. C.

The job is usually within the confines of the jurisdiction. Thus if a Detroiter applied to the Detroit Civil Service for a position as hospital attendant, he would expect to be employed at the City Hospital; if he applied (in the same city) to the Wayne County Civil Service Commission, he might be employed in a county institution many miles from his home but within the county; while if his application were filed with the state or Federal government for the same type of work, he might be sent to a hospital in a distant locality.

Those interested in a public service career should be encouraged to compete as early as possible, following the necessary education and training, both because they will have more opportunity to advance through promotional examinations and because they will become eligible for pensions earlier.

Most agencies have an "Examination Request Form" on which the applicant may check his vocational preferences. Once this is done, it is not necessary to watch bulletin boards, or apply in person. These slips are kept on file, and the applicant sent the formal announcement when it is planned to give that particular examination. This "announcement" is a mimeographed or printed page or folder which lists all pertinent data in regard to the job—the salary, the hours, the place of work, the principal duties, the minimum qualifications, such as sex, age, training, experience, a description of the examination, including the parts of the information (written) test, and that most important item often overlooked—the last date for filing the application. If, when the announcement is received, the applicant is still interested in taking the examination, he writes in for an application blank. This form is not much different from those in private industry except for its emphasis on citizenship and residence, and in some jobs, such as police work, strict health, height, weight and age requirements. This form must be completely filled out and returned to the agency before the closing date, and in some cases notarized, although this practice, as well as the practice of charging for the filing privilege, is fast passing out of vogue as being a hindrance to recruiting. Some jurisdictions require a small photograph, some fingerprints, and some both. Errors or omissions in filling out the form are not countenanced as readily as in private industry. An incomplete application is returned to the applicant for correction. And of course any misstatement of facts voids it, and disqualifies the applicant. It is not possible to file for an examination which has not been announced. The wait between the closing date for filing and the examination date is therefore usually brief—a matter of weeks at most—the time necessary to review the applications.

The applicant next receives in the mail a notice to the effect that his application has been accepted or rejected. If the former, the time and place of the examination is stated and the notice becomes his admission card. After the examination, which may be "assembled"—i.e., given to a group gathered in one place, or "unassembled"—based solely on the application form, from which training and experience is appraised, and any other documents required (such as licenses, certificates, or an honorable discharge). In either case, an objective score is arrived at and the candidate ranked accordingly. Whether he passes or fails, he is notified, and in the former case is told his score and rank. Thereafter, the length of time he must wait depends on two factors—his rank on the eligible register, and the extent of turnover in that class.

When he is finally called, there will be one more hurdle—the physical examination, and when that is passed, appointment, or at least an interview with the appointing authority. Some jurisdictions have a "rule of one" in which the next name on the list, if the applicant is still available, gets the job. Some have a "rule of three," which means the appointing authority has the choice of the top three names on the eligible register. These three are interviewed and the two not chosen go back at the top of the list to await the next vacancy.

The Examination

The word "examination" in employment practice usually connotes a written test, but in public personnel practice it has a much broader significance, meaning a complete appraisal of qualifications. Often the written part—the information test—is of minor importance, and weighted less than "experience and training" or the "oral interview." Thus an examination in which specific information is minor, but experience, general intelligence and appearance, speech and personality paramount, might be weighted as follows:

Information test 25%
Experience and training 25%
Intelligence test 25%
Oral interview 25%

The written part of the examination is usually arranged to suit the largest number of applicants, and for this reason, is often held on Saturdays, or at night. If a nation-wide examination, it may be held in as many centers as the number of applicants justifies. As many as 50 cities may participate simultaneously in a large examination, which may take from one hour to all day.

Most written examinations are of the objective type, made up largely of true-false, multiple choice, completion, or matching type of items. Essay type (free answer) questions are less commonly used, both because they cannot be scored as objectively, and because they do not cover as much ground. The modern examination attempts to be as practical as possible, and to measure only that knowledge which the job demands. They are never abstract quizzes on general subject matter. In fact, if the job is driving a truck, or running a lathe, a performance test will be devised which will measure these skills directly.

Availability of Materials

Because one of their prime functions is recruiting, Civil Service agencies are glad to advertise the kinds of work they have to offer, and give any aid in outlining minimum qualifications, and steps necessary to apply. They will be glad to place guidance experts on their mailing lists to receive all announcements of forthcoming examinations. While to vocational counselors in general there will seem to be much formality, delay, and red tape to placing qualified people, much of this is necessary, due to the many legal regulations which surround each step in the hiring process and the need for a final objective score by which applicants can be ranked in order of merit. To compensate for this rigidity of method, however, as compared to private employment, there will be more complete and accurate listing of all jobs, a fixed maximum and minimum salary for each position, and qualifications which are not subject to whim or prejudice.

Much fine research has been done in the public service in job analysis. Most merit systems have adopted some form of standardized job classification and pay plan, although these vary greatly in kind and worth. Some are made according to departments, as fire service, public health service, or the like; others according to the types of work done, such as clerical or custodial. In a complete set of specifications, the jobs for each class are listed, and the duties and qualifications for each fully described. This insures that a "Junior Clerk" or a "Psychologist II" in whatever department or institution he is employed will be doing work of a particular level of responsibility and supervision, calling for a prescribed amount of training and experience, and regardless of where he is working, putting in the same hours and getting the same pay.

These specification books can be obtained by writing to the individual agency. While these are too large and expensive for general distribution (often running into several hundred pages) they will, in most cases, be given to responsible vocational counselors.

All agencies also publish a "pay plan," which is merely a list of classes arranged alphabetically or by groups of classes, obtainable for the asking. A section of a page might look as follows:

page		
24	Cashier I	$2190 — 2310 — 2430 — 2550 — 2670
25	Cashier II	2910 — 3030 — 3150 — 3270 — 3390
26	Cashier III	3630 — 3810 — 3990 — 4170 — 4350

The column of numbers at the left refers to the page number in the book of specifications, in which that class appeared; the first of the salary figures is the induction rate for that class; and the other salaries the automatic annual increases. Often however, there is only a minimum and a maximum salary, with no intermediate steps.

In line with the newer emphasis on "positive recruitment," a number of merit system agencies have prepared pamphlets for vocational counselors and potential candidates on the "Careers in Public Service" theme. The Federal service has a number of excellent ones stressing government employment in general, and even specific fields, like agriculture, forestry, public health, and careers for women. Among the states, New York, Michigan, and Kansas, to name but three, have excellent booklets for potential candidates, outlining the advantages of working for those states, and listing the jobs and salaries offered. New York City and Milwaukee publish reference manuals for their own employees, designed to improve employee relations and morale by preventing misunderstandings about their own regulations. Wayne County (Michigan) and a number of other jurisdictions publish pamphlets outlining their veterans' program; New York city employees have their own Civil Service newspaper, which carries news items about new rules, employee social doings, announcements of future examinations, and the like. Even motion pictures are available to vocational advisor groups for educational purposes: the Federal government, Tennessee Valley Authority, and the State of Louisiana have pioneered in this medium.

The American Nurses' Association's Committee on Civil Service and the merit system unit of the American Public Health Association (both in New York) are typical of the assistance being given members of certain professions by their national bodies. Such committees are good sources of reference for information on positions and general practice within a trade or profession. They cooperate with Civil Service Commissions by giving practical help as collaborators, or as a board of review, setting standards, passing on qualifications, furnishing data for wage surveys, and the like. These committees are being asked for assistance in all steps of the examining process, including written and oral tests and the rating of training and experience. They assist, of course, at either the national, state or local level.

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4. O'Rourke, L. J. *Opportunities in government employment.* New York: Garden City Publishing Co., 1940.
5. Spero, S., (editor) *Government jobs and how to get them.* Philadelphia: J. B. Lippincott Co., 1945.

L. B.

CLERICAL APTITUDE TESTS

Cardall Test of Clerical Competence. This test, by Alfred J. Cardall and Jane Gilbert, is designed to measure aptitude for a variety of clerical occupations. The first two, checking names and numbers, are used in industrial and mechanical occupations where the measurement of perceptual ability is important. The test was constructed in a large public utility company, where a wide range of clerical occupations existed. An extensive study of the job descriptions and breakdowns was the basis for the final selection of the four factors which this test purports to evaluate. The test differs from other clerical tests in that it was built in a business, rather than a school, situation, and standardized on business employees rather than commercial students. Two sections of the test are devoted to checking, and two to classification; one checking section is numerical in nature, the other verbal, and similarly with the classification sections. This is typical of the breakdown of clerical functions, although it appears to be widely overlooked in the usual casual selection of clerical employees. Many clerks, such as stenographers and typists, are involved with verbal concepts, while bookkeepers, tabulating clerks and comptometer operators are involved mainly with numerical concepts. In a clinical interpretation of this test, therefore, attention is called to the fact that a consideration of the section scores may be more specifically useful than the single composite score, and accordingly norms are provided for all sections, as well as for the composite score.

The inter-correlation in checking—numbers and checking—names is .69; and other inter-correlations range from .23 to .38, reflecting a high degree of independence. The higher relationship in the first two parts seems to indicate that these sections are also measuring a perceptual factors, as well as clerical functions. This point is further brought out by the fact that these checking sections have entered into straight line prediction formulas for a number of industrial jobs, ranging from sewing machine operation to tool design.

The following table gives the reliability coefficients of the several parts and of the entire test.

Number checking — N .99
Name checking — V .98
Classification — V .90
Classification — N .98
Entire Test .99

On the theory that validity refers to the predictive significance of the situation, various validity coefficients have been published. In the organization in which the test was constructed, the study involved over 3,000 employees. Validity coefficients for various departments ranged from a low of .17 to a high of .90, corrected for attenuation. The lowest validity coefficient of .17 was obtained with messenger girls where little or no clerical detail was involved. In clerical departments, correlations ranged from .48 to .90, with the observation very apparent that as the clerical job content increased, so did the predictive significance of the test.

The test is published by Science and Research Associates, 228 S. Wabash Street, Chicago 4, Illinois.

A. J. C.

Detroit Clerical Aptitudes Examination. The Detroit Clerical Aptitudes Examination was copyrighted in 1937 by Harry J. Baker, Director, Psychological Clinic, Detroit Public Schools, and Paul H. Voelker. Purpose of the test as stated in the examiner's handbook is "to discover and select pupils who have abilities suitable for commercial courses in high school."

The test covers eight full-size pages containing eight sub-tests. These include in order: 1. copying a paragraph by hand, 2. number, figure and name checking, 3. arithmetic computation, 4. motor speed and accuracy, 5. general clerical information, 6. spatial relations, 7. classification, and 8. alphabetic classification. Each subtest has a time limit ranging from two to five minutes. Total testing time, aside from test administration time, is thirty minutes.

Scoring keys are provided except for the key for measurement of quality of the handwriting sub-test. The latter is available from the Public School Publishing Company, Bloomington, Illinois, at 18¢ per copy.

Norms are provided in the form of translation of test scores into an "age score" ranging from 8 years, 0 months, to 20 years, 11 months. The authors report that these age scores are based on 1,500 cases. Letter ratings of A, B, C+, C, C—, D and E are also provided for each age group from 10 years through 16 years. The meaning of these letter grades is not stated. Percentile norms are not provided.

The authors report a reliability coefficient of 0.85 ± .01, based on re-testing 78 cases after an interval of three weeks.

The validity study is based upon correlations with grades in commercial subjects. Correlation of the test with grade in bookkeeping (based on 98 cases) was 0.56, with shorthand (based on 75 cases) 0.37, and with typewriting (based on 126 cases) 0.32.

The authors also report inter-correlations among each of the eight sub-tests and the Detroit Advanced Intelligence Test based on a study of 575 cases. These correlations are all positive, ranging from .105 to .560. The correlation between the total score on the Clerical Aptitudes Examination with the Detroit Advanced Intelligence Test is 0.44.

The test has been reviewed by Anderson (1) but no further studies appear in the literature.

The test is published by the Public School Publishing Company, Bloomington, Illinois.

Reference:

1. Anderson, R. N. Review of clerical tests (1929–42). *Occupations*, 1943, *21*, 654–60.

S. L.

Minnesota Vocational Test for Clerical Workers. The Minnesota Vocational Test for Clerical Workers, devised by Dorothy M. Andrew, Donald G. Paterson, and Howard P. Longstaff, was standardized through the facilities of the Employment Stabilization Research Institute at the University of Minnesota. This test, consisting of two parts, a number checking test of two hundred items and a name checking test of two hundred items has a time limit of fifteen minutes.[2]

Factorial analysis shows that the Minnesota Clerical Test measures a specific ability, one relatively independent of spatial and dexterity abilities, and of academic ability except for very heterogeneous groups. The test fulfills the requirements for an aptitude test because clerical training and experience do not have any significant effect on test scores. Analysis reveals that the test measures an aptitude positively related to the abilities to observe and compare, to discriminate rapidly small differences, to adjust to new situations, and to concentrate on problems. Although the correlation between the clerical number and name checking tests is +.66, number checking measures a numerical factor, one related to tests of verifying arithmetical computations; whereas, clerical name checking measures a verbal factor and is associated with spelling ability.[1]

The reliability of the Clerical Test is sufficiently high for individual diagnosis, as shown by coefficients of +.90 for odd-even items or for comparable forms, and +.85 for test-retest reliability.[1 2 3]

The validity of this test has been established in many ways. Clerical test scores correlate significantly with personal history ratings, supervisors' and combined ratings of employed clerical workers, and with commercial teachers' ratings of students enrolled for one and one-half years in commercial courses. The test has greater value than an intelligence test for the prediction of grades in university accounting courses, achievement in shorthand, typing, and bookkeeping, and for the differentiation of rapid from slow typists.[2 3 5]

Occupational ability profiles and difference ratios reveal that the Clerical Test differentiates employed clerical workers from workers in general, and from workers in specific occupations, such as retail sales, nursing, and drafting.[3 4 9] Ghiselli shows that adding other standardized clerical tests to the Minnesota Clerical Test increases only slightly the accuracy of prediction; hence, he concludes that the Minnesota Clerical Test used alone is adequate for classifying individuals according to fitness for general clerical work.[6] Hay reports that both parts of the test correlate significantly with production records of bank machine bookkeepers. Two test batteries, both of which include one or both parts of the Minnesota Clerical Test, have been used by him for nearly five years with high predictive value. The batteries select 91 per cent of the best bookkeeping machine operators and 72 per cent of the poorer operators.[8]

Researches indicate that the test is a valid index of success in clerical work. The best prediction of clerical ability is obtained by combining scores on clerical aptitude and intelligence tests and, generally, by weighting clerical aptitude 1.42 as compared with 1.00 for intelligence.[2]

Norms are available for adults gainfully occupied, for employed clerical workers, for school grades 8 through 12, and for ages 14 through 18. Tentative norms have been established for various types of clerical workers, as stenographers, office machine operators, and bank tellers. Separate norms are provided for men and for women, since women and girls are superior to men and boys on the test.[2 7 10 11]

The Minnesota Vocational Test for Clerical Workers with the Manual of Directions and scoring keys are published by The Psychological Corporation, 522 Fifth Avenue, New York City.

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2. Andrew, D. M. and Paterson, D. G. *Manual of directions for the Minnesota Vocational Test for Clerical Workers.* New York: Psychological Corporation, 1941.

3. ———. *Measured characteristics of clerical workers.* Bull. of Empl. Stab. Res. Inst., Minneapolis: Univ. of Minn. Press, 1934, Vol. III, No. 1.
4. Dvorak, B. J. *Differential occupational ability patterns.* Bull. of Empl. Stab. Res. Inst., Minneapolis: Univ. of Minn. Press, 1935, Vol. III, No. 8.
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10. Schneidler, G. G. Grade and age norms for the Minnesota Vocational Test for Clerical Workers. *Educ. Psychol. Meas.* 1941, 1, 143–156.
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D. A. B.

NIIP Clerical Test (American Revision). The NIIP Clerical Test (American Revision) is a modification prepared by Moore in 1933 of a clerical test prepared by the National Institute of Industrial Psychology of England. Since the tests produced by the NIIP are privately published, and unreported, there is no opportunity for comparison of the American revision with the original.

The test is composed of seven sub-tests. The first sub-test is rather unique. Administered orally by the examiner, it involves the presentation of a statement including facts, names and numbers followed by questions regarding the content of the statement. This sub-test still contains some English terminology, such as "a packet of Old Gold cigarettes" and "Messrs. Morgan, 43 High Road, Hull." The other sub-tests have been rather thoroughly modified to suit American terminology. The remaining sub-tests are of the following types: 2. classification, 3. arithmetic computation, 4. copying names and numbers, 5. number and name checking, 6. numerical and alphabetical classification, and 7. arithmetic problems and "reasoning" items.

Each sub-test except the first has a time limit ranging from two to five minutes. The author reports that the test can be administered in 30 minutes and scored in 5 minutes.

Norms are provided for high school students and college seniors. There is no indication as to the number of cases on which these norms are based. Scoring keys are provided, but no effort has been made to provide for efficiency in scoring.

In neither the test material nor the study originally reported by Moore [2] is there any reference to the reliability of the test.

Moore [2] reports the validity of the test in terms of the correlation between test performance and supervisors' ratings of 44 clerical workers. In one company in Springfield, Massachusetts, test performance of 18 clerical workers yielded a coefficient of correlation of 0.87 with the rank order rating by two supervisors. In another establishment the same type of correlation based on 26 clerks yielded a coefficient of 0.94. These are presumably rank order coefficients. Their reliability is not stated. A great deal of informal information is reported by Moore. He indicates that in both firms all clerks who scored above 80 were "doing satisfactory work." Moore also indicates that "a mean score of 95 for college graduates and of 80 for high school graduates has been, in my experience, a fair guarantee that the recommended candidate will not be a disappointment."

The same type of informal reporting of confidence in the use of the test for selection purposes is reported by Armstrong.[1] Although the number of workers is not stated and insufficient quantitative data are reported for critical review, the author, on the basis of experience in applying this test to clerical workers at the Westinghouse Electric Company, Springfield, Massachusetts, reports his opinion that the test is a satisfactory device for promotion, transfer, and selection of clerical employees. Armstrong reports a "correlation of .80 between those who stood high in all sections of the test, and the department managers' ratings." Details of the rating method, method of correlation, and the population of workers tested are not given.

The test is published by the Psychological Corporation.

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1. Armstrong, T. O. New methods in promoting and hiring. *Personnel J.*, 1936, *14*, 280–83.
2. Moore, H. The institute's clerical test in America. *The Human Factor*, 1933, *12*, 407–09.

S. L.

O'Rourke Clerical Aptitude Tests. The O'Rourke Clerical Aptitude Tests consist of two separate tests: The O'Rourke Clerical Aptitude Test, Junior Grade (Clerical Problems), published in 1926, and the O'Rourke Clerical Aptitude Test, Junior Grade (Reasoning Test), published in 1936.

The Clerical Problems Test is printed on one page, the front of which contains instructions to the examiner, and sample test items for the examinee. The entire test, containing six sub-tests, is printed on the reverse side. Sub-tests include: 1. alphabetic classification, 2. arithmetic computation, 3. location and classification, 4. number and name checking, 5. a different type of arithmetic computation, and 6. another alphabetic classification test. The subject is to complete each test before starting the following. Total time limit is twenty minutes.

The Reasoning Test contains forty-five items. Test items are composed of the following types: spelling, general information, arithmetic problems, verbal analogies, paragraph and sentence comprehension, vocabulary, and a classic type of multiple choice "reasoning" item. Time limit is twenty minutes.

Scoring keys are legible and adequate. There are no unusual scoring features in either test.

The norms provided by the publisher are "based on typical groups of applicants for clerical positions, 792 cases." Norms are provided for a combined score on the two tests, as well as for each separate test. No data is given as to the age, occupational background or educational status of the population on which the norms were based. A recent study by Woody[3] reports norms on each test based on a study of 816 tenth grade pupils, 820 eleventh grade pupils, and 1775 twelfth grade pupils of high schools in the state of Michigan. Comparison of the norms on the Clerical Problems Test with the norms based on the 792 clerical applicants shows a considerably higher test performance on the part of the scholastic group. The median score for the tenth grade group, for example, in the Clerical Problems Test falls above the 70th percentile on the job applicant norms. The scholastic norms reported in this study for the Clerical Reasoning Test are not as superior to the author's norms. In the latter test the median of the eleventh grade group falls at the 50th percentile in the author's norms.

No standardization study is reported. In a communication to Anderson[1] the publishers report that "reliability is 0.89 (odds-evens), and the average validity is 0.72 (industrial) on 792 cases."

Relationship of performance on the Clerical Problems Test to performance on two other commonly used tests has been reported by Copeland.[2] Based on a sample of 211 unemployed clerical workers registered with the Cincinnati Employment Center the Clerical Problems Test showed a correlation of 0.56 ± .032 with the Otis Self-Administering Test of Mental Ability, Higher Form, 30 minute time limit. Coefficient of correlation with the total score on the Minnesota Vocational Test for Clerical Workers was 0.55 ± .033; with the numbers portion of the Minnesota 0.45 ± .037 and with the names portion of the Minnesota 0.53 ± .034.

These tests are published by The Psychological Institute, P.O. Box 1117, Lake Alfred, Florida.

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1. Anderson, R. N. Review of clerical tests (1929–42). *Occupations,* 1943, *21,* 654–60.
2. Copeland, H. A. Some characteristics of 3 tests used to predict clerical success. *J. Applied Psych.,* 1936, *20,* 461–70.
3. Woody, C. *Aptitudes, achievements and interests of high school pupils.* Ann Arbor: Bureau of Educational Reference and Research, School of Education, University of Michigan, Bulletin No. 157, 1945.

S. L.

Survey of Working Speed and Accuracy. This *Survey* was constructed and standardized by Floyd L. Ruch, Psychology Department, University of Southern California, for the selection and placement of workers who are expected to perform routine operations requiring speed and accuracy.

The *Survey* consists of four sub-tests which experimentation revealed to be best adapted for predictive and selective purposes when applied to the general population.

Briefly described, these tests are:

Number Checking. One hundred and fifty pairs of numbers are marked with a check mark when they differ in any way whatever. The numbers range from two digits to ten digits and sometimes contain code letters, plus and minus signs, per cent signs, decimals and fractions. Provision is made for scoring both speed and accuracy.

Code Translation. A message is translated from a numerical code into the alphabet by means of a key.

Finger Dexterity. The subject places pencil dots in a series of spaced O's. This measures finger dexterity as it is involved in operation of office machines, filing, etc., and is also intended to measure ability to persist at a monotonous task.

Counting. In this test the subject counts and lists all of the A's, E's, I's, O's and U's in each of forty lines of prose text. The ability to disregard the story idea and pay close attention to arbitrary details measures an important requisite of a wide variety of office and factory operations.

The tests may be used in industry, business, and schools for predictive and selective purposes with reference to employees, applicants, and trainees; also as an aid in handling related problems in clerical personnel management.

The validity of this *Survey* was determined by correlating test scores with supervisors' job performance ratings. Intercorrelations of the four sub-tests based on a cross-section of 100 adult cases have been obtained, as follows:

	Code Translation	*Finger Dexterity*	*Counting*
Number Checking	.59	.23	.24
Code Translation		.22	.24
Finger Dexterity			.15

Directions for giving the test are supplied in a manual for the examiner. Specific instructions for the examinee, with illustrated samples necessary for each test, are contained in the test booklet. The *Survey* can be easily administered by anyone who will carefully follow the Manual of Directions and observe the time limits as stated for each test. The total time for the tests themselves is twenty minutes.

Scoring is objective and easily accomplished by use of a scoring key.

Standards are based on a sampling comprising 400 male and 400 female cases, ranging from sixteen to fifty years of age. They were specially selected as representative of people available for employment. Percentile norms are provided for interpretation of the scores on each of the tests.

This test is published by the California Test Bureau, 5916 Hollywood Blvd., Los Angeles 28, California.

W. W. C.

Thurstone Examination in Clerical Work. The Thurstone Examination in Clerical Work was produced in 1922 by L. L. Thurstone, then of the Carnegie Institute of Technology. Purpose of the test is clearly stated in the first paragraph of the manual of directions: "This clerical examination is intended to serve as a supplement to the interview in order to determine at least roughly the applicant's general intelligence as well as his accuracy and speed in doing clerical tasks."

An unusual feature of the test blank is the attempt by the author to use the cover sheet as a job application form. Identifying information such as "Nationality" and "Church" are requested, as well as educational history, work history, and references.

The body of the test contains eight sub-tests covering seven full-size pages. These sub-tests involve: 1. checking simple additions and subtractions for errors, 2. location of misspellings in a text, 3. letter cancellation, 4. digit-letter substitution, 5. location and alphabetizing groups of names, 6. classification of data, 7. arithmetic computations involving decimals, fractions and percentages, and 8. understanding of proverbs.

The test is "self-administered." Although there are no time limits, directions for each sub-test include a statement that "both speed and accuracy are important." The examiner is instructed to record total elapsed time, which becomes a time score. A total error score is also derived. Scoring of errors is more time-consuming than in most tests of this type because of the length of the test and cumbersome physical layout. A combined score is secured simply by adding the time and error scores.

No standardization study is reported, either in the test manual or in subsequent literature on testing. A table for interpretation is provided, whereby the error score, the time score, and the combined score can be translated into an accuracy rating, a speed rating, and a speed-and-accuracy rating. These ratings range over five categories, from "very superior" to "very inferior." There is no indication of the normative group to which these ratings refer, nor of the basis for assigning any rating to any particular score. There is no report on the reliability of the test.

There appear to be no studies of employment of clerical workers which make more than incidental reference to this test.

The publisher is World Book Company, Yonkers-on-Hudson 5, New York.

S. L.

CLERICAL APTITUDE TESTS, EVALUATION OF. It is fortunate that considerable attention has been devoted to the measurement of clerical aptitudes. Since 1900 there has been a rapid increase in the number of people engaged in clerical occupations. In the 1940 U.S. Census over four million people reported that they were engaged in some type of clerical work, which covered a wide variety of jobs requiring different skills and different levels of ability. However, even though the field has been expanding, studies of the occupational choices of high school youth consistently reveal that the proportion interested in pursuing a career in clerical work, especially in the higher levels, is far greater than the number that can be absorbed in the field. Therefore, vocational counselors are interested in tests that have been developed to help them appraise an individual's occupational fitness for clerical work.

Studies of tests as a method of selection of employees for various office jobs have appeared in the psychological literature as early as 1920. During the past 25 years tests have been used extensively in business and industry in the selection of employees for office jobs and have generally proved their worth. The tests used have included intelligence or mental alertness or scholastic aptitude tests; tests of clerical proficiency in typing, shorthand, and bookkeeping; and tests of clerical aptitude which measure some of the abilities required for success in clerical occupations.

This review is limited to a consideration of the clerical aptitude tests which are generally used for vocational guidance purposes and which presuppose no previous experience in clerical work. These tests vary from the measurement of a single function, such as comparison of numbers or comparison of names, to test instruments which sample other aspects of clerical work, such as arithmetic reasoning, filing, grammar, substitution, spelling, vocabulary, business information, motor speed, classification, etc. However, the trend in clerical measurement has been toward the development of tests which cover a variety of tasks based on the requirements of clerical occupations.

The Minnesota Vocational Test for Clerical Workers developed by Dorothy M. Andrew and distributed by the Psychological Corporation is one of the most widely used tests covering a single task. There is a long and short form of the test but in practice only the latter is used. The test consists of two parts: number checking and name checking. The short form consists of 200 pairs of numbers, ranging from two to twelve digits; and 200 pairs of names ranging from seven to sixteen letters. In both parts of the test the subject is to check only those pairs which the the same. The total working time for both parts of the test is 15 minutes.

The reliability of the test by comparing odd and even items or by using comparable forms is about .90. The test-retest reliability is .85 after an interval of ten weeks. The validity of the test was determined by several methods. Personal history ratings based on education, previous clerical experience, commercial training, and age at leaving the highest school grade were correlated with test scores for groups of employed clerical workers. These validity coefficients were about .65. The correlation between supervisors' ratings and test scores yielded coefficients of approximately .37. When the personal history ratings and supervisors' ratings were combined, giving equal weight to each, the correlation with test scores was about .60. For a group of vocational high school students, the correlation between commercial teachers' ratings and clerical test scores was .58. The test was also found to be related to grades in accounting at the college level and was able to differentiate between a rapid and average group in typing from a slow group. Employed clerical workers have been found to do better on this test than do workers in general. Unemployed clerical workers have been found to score significantly lower on this test than an employed group. Women do better on this test than do men. Performance on the test was found to be little affected by age, years of clerical experience, and formal education. For fairly homogeneous groups, little relationship was found with intelligence.

Norms are available for employed male and female clerical workers, for male and female adults gainfully employed, and for high school boys and girls for grades 8 through 12. Tentative norms have also been developed for various categories of clerical workers, such as female office machine operators, female stenographers, male bank tellers, male shipping clerks, male and female general clerical workers, etc.

The Minnesota Vocational Test for Clerical Workers is one of the more useful tests in the field because of the extensive research on which this test is based and because of the extensive norms available. However, it must be recognized that it is applicable chiefly to the lower levels of clerical work where speed and accuracy are the most important factors. The weaknesses of the test are that it covers only a single function and that it is concerned with speed primarily. Although the test author reports that test performance is performed usually at 95% accuracy for number checking and 92% for name checking, the vocational counselor, in individual situations, is at a loss to know how to interpret high ratings accompanied by considerable inaccuracy or low ratings accompanied by a high degree of accuracy. Then too, among high school students, there frequently occur performances where there are very wide differences in ratings on the separate parts of the test, e.g., a very inferior rating in number checking accompanied by a high degree of accuracy, and a very superior rating in name checking, accompanied by a high degree of inaccuracy. These differences are explainable on the basis of a reported correlation of .66 between number checking and name checking scores, but upon investigation by this writer it has been found that the subject interpreted, with some justification, the directions, "This is a test for Speed and Accuracy. Work as fast as you can without making mistakes," as meaning that equal weight was to be given to speed and accuracy. But when he recognized that he had attempted comparatively few items on number checking he changed his approach and concentrated on speed in name checking so that he did much better in this part of the test, although the rate of inaccuracy was very high.

The test author reported that the correlation between academic ability test scores and clerical test scores for university business students, high school commercial students, and employed clerical workers was approximately .23. Correlation between intelligence and number and name checking was .12 and .37 respectively. For a heterogeneous group varying from less than 7th grade to better than 12th grade ability, the correlation between intelligence and number and name checking was .47 and .65 respectively, but the test author stated that these coefficients do not apply to the more homogeneous groups for which the test was designed. Although the test author reported that there was little relationship between intelligence and clerical test scores, this writer found the relationship to be higher. For 193 Tenth Grade students, he found that the correlation between total scores on the American Council of Education High School Examination (1942 Edition) and number and name checking scores was .17 and .46, respectively. This is similar to the correlations reported by the test author. But when the data for these Tenth Grade students were analyzed separately for each sex, the correlations between ACE total scores and number and name checking scores were —.04 and .31, respectively, for girls (112 cases); and .44 and .63, respectively, for boys (81 cases). For a homogeneous group of 71 male job applicants, all 18 years of age and high school graduates, the correlation between intelligence as measured by the Pressey Senior Classification Test and number and name checking was .07 and .53, respectively. For 54 female job applicants, 18 and 19 years of age, and all high school graduates, the correlation between the Pressey Test scores and number and name checking was .32 and .51 respectively.

The Examination in Clerical Work: Form A, developed by L. L. Thurstone in 1922, and distributed by the World Book Company, represents one of the earliest tests sampling other aspects of clerical work. The test has 8 parts: (a) checking arithmetic errors; (b) spelling; (c) letter cancellation; (d) letter substitution; (e) alphabetical filing; (f) number filing; (g) arithmetic computation; (h) matching proverbs. The test is self-administering in that once the subject has read the preliminary instructions, he can proceed directly from one sub-test to the next. The total time required for completion of the test varies from 45 to 100 minutes. Unlike other tests, it is scored in terms of the time required, the number of errors made, as well as a combination of the two scores. Norms are presented for employed clerical workers with ratings ranging from very inferior to very superior.

No reliability has been reported for this test and little is known as to its relationship to probable success in clerical occupations. Also, no information is available regarding its relationship with intelligence. But since the sub-tests are similar to those of other clerical aptitude tests whose relationship with intelligence is fairly high, and since the items in the last sub-test have been used frequently in standard tests of scholastic aptitude, one can assume that the test scores would correlate quite highly with intelligence. The usefulness of the test lies in the fact that once the examiner has started the subject on the test, he does not have to spend any further time administering it. The weakness of the test lies in the difficulty of interpretation, which is due to the construction of the test and the method of scoring: since there is a time-score for the entire test only, and none for the various sub-tests, the counselor has no way of knowing, except perhaps by examination of the errors made, the relative strengths and weaknesses of the subject. Thus, the writer has observed that a subject weak in arithmetic computation may spend almost as much time on that sub-test as he does on the other seven put together.

The Detroit Clerical Aptitudes Examination developed by Harry J. Baker and Paul H. Voelker, and distributed by the Public School Publishing Company is designed to predict the success of students in commercial courses in high school. There are eight sub-tests: (a) rate and quality of handwriting; (b) rate and accuracy in checking; (c) simple arithmetic; (d) motor speed and accuracy; (e) simple commercial vocabulary; (f) visual imagery; (g) classification; (h) alphabetical filing. The working time is 30 minutes. Practice exercises are provided for all but the first sub-test.

After a three week interval the test-retest reliability was reported to be .85. The validity of the test was determined by obtaining the correlations between the test scores and marks in commercial courses. With bookkeeping marks the correlation was .56, with shorthand, .37, and with typing .32. Age norms are provided from 8 years to 21 years 11 months.

The correlation of test scores with intelligence as measured by the Detroit Advanced Intelligence Test was found to be .44. Lorge found through factorial analysis that the test was loaded with a speed factor and an intelligence factor, and felt that basically the test measured factors common to intelligence tests and speed tests. He concluded that the test did not seem to be differentiating between hypothetical clerical aptitude and general intellectual ability.

The Turse Shorthand Aptitude Test, distributed by the World Book Company, is designed primarily to eliminate students who are unable to benefit from the study of shorthand. It consists of seven sub-tests based upon an analysis of the abilities necessary for success in stenography. The seven sub-tests are: (a) stroking (motor speed); (b) spelling; (c) phonetic association; (d) symbol transcription; (e) word discrimination; (f) dictation; (g) word sense. The test, suitable for use with groups, requires from 45 to 50 minutes for proper administration, although the actual working time is about 40 minutes. With the exception of stroking, the odd-even reliability coefficients, corrected by application of the Spearman-Brown Prophecy Formula, for the other six sub-tests ranged from .86 to .95 (268 cases). The reliability coefficient for the total test score was .98. Regarding the validity of the test, the test author reported a correlation of .50 between the verbatim transcription of three dictated letters and the total aptitude test score for 162 students who had completed one year of shorthand instruction. The correlation between the total aptitude test score and the Durost-Turse Correction-Transcription Test of Stenographic Achievement, Form A, involving the correction of a prepared transcription of the three dictated letters, was .67. Scores on the Correction-Transcription Test were found to show a correlation of .33 with ninth grade English marks (174 cases) and .35 with I.Q., as measured by the Otis Self-Administering Test and the Terman Group Test of Mental Ability (194 cases). Turse concluded, on the basis of these correlations, that the aptitude test was more effective in predicting shorthand achievement at the completion of one year's instruction than either ninth grade English marks or I.Q. However, he did not present correlations between the aptitude test scores and either ninth grade English marks or I.Q.

The writer made a study of this test to determine what relationship might exist between scholastic aptitude as measured by the American Council on Education High School Examination and the Turse Shorthand Aptitude Test. He found that the relationship between the two tests was very high even for a restricted grade group. For the ninth grade the correlation between the two measures was .80 for boys and .78 for girls; for the tenth grade it was .85 for boys and .75 for girls. He concluded that it would appear questionable to include this test in a test battery if the ACE were also included, because there was a great deal of community between the two measures.

The General Clerical Test, distributed by the Psychological Corporation, "has been designed as a general differential test for use with all types of clerical workers." The test consists of nine parts with a working time of 46 minutes: Part I, copy correction; Part II, alphabetical filing; Part III, arithmetic computation; Part IV, checking for errors in simple addition; Part V, arithmetic reasoning; Part VI, spelling; Part VII, reading; Part VIII, vocabulary; Part IX, grammar. Parts I and II are called the Clerical Section, Parts III to V, the Numerical Section, and Parts VI to IX, the Verbal Section. On two clerical populations of more than 100 cases, factorial analyses of a preliminary form showed that there were factors in common with all three divisions. The inter-correlations between the nine parts vary from .26 between Part V and Part VII to .62 between Part VI and Part IX. The split-half reliability coefficients range from .63 on Part V to .99 on Part II. No reliability is reported for the total test score.

In 1942, when the test was first published, its use was limited to business organizations but it is now generally available. Norms are available for the three Sections for high school senior girls, clerical employees, draftsmen and industrial employees, as are the means and the standard deviations for each of these groups, for each sub-test and for the total score. Clerical employees tend to do better than draftsmen but a comparison of the means of these two groups shows that the difference is not statistically reliable. Both these groups do better on the test than do the high school senior girls (commercial students), and all do considerably better on the test than do miscellaneous industrial workers. There is no information available as to the relation between score on the test and probable success in clerical work or in high school commercial courses.

This test also correlates quite highly with intelligence. For 146 commercial high school students the correlation between the total score on the General Clerical Test and the total score on the Modified Alpha Examination, Form 9, was .74.

The question may be raised as to whether there is such a thing as clerical aptitude. With the possible exception of the Minnesota Vocational Test for Clerical Workers (and even with this test further research is necessary), their relationship with academic ability tests is substantial. In vocational guidance work, where testing may be used to serve an exploratory function or to determine relative strengths and weaknesses or to confirm the counselee's occupational fitness for clerical work, the tests used to measure so-called clerical aptitude can serve as useful supplements to the tests employed to measure scholastic aptitude or mental alertness. The latter can give an indication as to the level of clerical work the counselee is capable of, while the former, with its sampling of a variety of different tasks and its dealing with clerical content can give useful information regarding a counselee's achievement in spelling, grammar, arithmetic computation, vocabulary, etc., which are needed in many clerical occupations. Such clerical aptitude tests also have the advantage of enabling the counselor, in the absence of other information regarding a counselee's achievement in these aspects, to ascertain from the sub-tests defects which need remedial work. Certainly in business and industry it would be useful to use tests dealing with clerical material in the selection of clerical personnel, preferably in conjunction with a mental alertness test which has appropriate norms. Their value for vocational counselors will increase as more objective criteria of success for various clerical occupations are established, and the relationship of clerical aptitude test scores with such criteria are determined. Until such time, counselors should bear in mind the present limitations of clerical aptitude tests and should exercise caution in their use and interpretation.

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CLERICAL WORK, APTITUDE FOR

Definition

Clerical aptitude as a term used to identify a specific characteristic of the individual from which predictions can be made concerning probable success in a given line of activity, has been used with some ambiguity in the literature of psychology and vocational guidance and selection. "Clerical aptitude" as a unique trait, and general aptitude for clerical work are not coextensive in meaning. Clerical aptitude is the characteristic of the individual which enables him to perform well on psychological tests of checking, comparing, etc. Analyses of clerical aptitude through correlational studies and through factorial analysis indicate that it includes a perceptual factor as a principal component; motor skill or dexterity is another component, and verbal ability, number ability or a spatial visualization factor may be involved, depending on the nature of the material to be checked or compared. A name checking clerical test, for example, correlates with tests of spelling ability, vocabulary, etc., while a number checking test may be expected to show correlation with tests of arithmetic and related skills.

Clerical workers are differentiated from workers in other fields by characteristics other than superior performance on a comparing and check-test, and differences between good and poor clerical workers appear on tests other than those for clerical aptitude. However, the fact that tests of clerical aptitude, as defined above, make these differentiations more sharply and consistently than any other measure makes it particularly useful to the employment officer or the vocational counselor when used as a part of a battery. Although no other single characteristic differentiates clerical workers from all other occupations, success in clerical work depends on more than clerical aptitude alone. For this reason there is some tendency to minimize the usefulness of a measure which limits itself to the evaluation of this trait. Low correlations obtained between tests of clerical aptitude and success in office occupation have also given support to this view. Such correlation coefficients, however, are probably attenuated by a number of factors. It has been found that clerical workers are a highly selected group with respect to clerical aptitude, even though tests for this trait were not used in employment. The median percentile rank for employed clerical workers has been found to be well above the 90th percentile point of a distribution of scores made by a standard population sample. This homogeneity is probably increased with length of employment, in so far as clerical aptitude is a factor in success.

Clerical work is not necessarily a feature of all office occupations. The fact that new employees are placed first at routine clerical work, and as they gain in experience are given a wider range of responsibilities with clerical activity as such a less important component of their position may be another factor producing declining correlation coefficients between measures of clerical aptitude and success, as amount of experience increases. Although the notorious unreliability of success ratings for office work is a source of difficulty in making validation studies, it is found that the correlation between aptitude for clerical work and success is higher when additional variables are taken into account.

Aptitudes for clerical occupations are stated by Bingham to be evidenced by at least four kinds of abilities. The first is clerical aptitude strictly defined, "the ability to observe words and numbers, to see instantly and correctly what is on the paper." The second is intellectual ability, the mental capacity to use verbal and non-verbal concepts, to grasp the meaning of words and other symbols, to solve problems, see relationships, and make correct decisions. The third kind of ability is command of the basic educational skills, involving ability to add and multiply, spell correctly, alphabetize, use the language correctly, and in certain jobs and at the upper levels, technical knowledge of a particular field. "The fourth kind of ability is motor. With agile fingers and hands, the various papers, cards, pencils, typewriter, comptometer and other office tools are adroitly manipulated."

The advantages of measuring the abilities of the individual for these separately, rather than through application of a composite test are fairly obvious. The employment officer is enabled to make use of the information about the various abilities separately for more effective placement after employment and to solve problems of transfer more wisely. A more useful program of supervision and training is also possible. The guidance counselor by giving more complete self-insights to students aids them in making decisions regarding suitable and unsuitable occupations, and by pointing out specific weak or strong points, provide the basis for directing future training more wisely, or planning how to compensate for lacks which do not appear amenable to training. It has been demonstrated by the research investigations of the Employment Stabilization Research Institute of the University of Minnesota that clerical aptitude undergoes little change as a result of clerical experience or training in commercial courses, but there are no reports to the present time of attempts to modify clerical aptitude by training specifically directed toward such modification. It may be found directed training in specific skills and improved work methods may have a significant influence in raising initially low scores on tests of clerical aptitude. For the educator in the field of commercial education, information about the standing of students on each kind of ability may be utilized for improving admission standards, improvement of the curriculum and making individualized instruction more effective.

History

The emergence of the concept of clerical aptitude cannot be studied apart from the history of clerical aptitude testing. It was as tests were developed and used to differentiate clerical workers from those in other occupations that the concept of specific aptitude arose. The first tests related to comparing and checking activities successfully used in this field were the Scott Company File Clerk test, devised shortly after World War I, and the Johnson O'Connor Worksamples constructed about the same time. The number of persons engaged in clerical occupations has risen sharply since 1900. Bingham points out that by 1930 for the country as a whole 5.4 per cent of the men and 18.5 per cent of gainfully employed persons were doing clerical work, with even higher proportions for the cities. Nowhere is this trend reflected more sharply than in the government service where the number of persons in clerical work has been rising steadily.

Rapid as has been the increase in clerical work, the number of young persons attracted to clerical work has increased even faster. During the past couple of decades opportunities for clerical training in the secondary schools has increased to the point where commercial courses are offered in almost all public high schools.

This is also paralleled by an unduly large proportion of persons seeking clerical work at the time of leaving school. When a situation exists where there are as many persons preparing to pursue work in a given field as there are persons employed in that field, as is the case for several of the clerical occupations, even a rising demand for workers cannot result in sufficient opportunity for employment to all, and the need for adequate measures of aptitude both for guidance and for selection purposes is emphasized.

The U. S. Civil Service has developed tests of aptitude for clerical work which yield measures of several different abilities indicating probable success. Some of these have been made available for use in industry and by counselors. Other tests, also of this nature have been developed by the British National Institute of Industrial Psychology, and adapted for use in this country. Recent work in this field has also been done by Thurstone at the University of Chicago, and a somewhat unique approach to measurement of clerical aptitude has been attempted in the Cardall-Gilbert test which requires comparing and checking names and numbers, one member of each pair being presented in script with the other printed in ordinary type. The underlying assumption is that this kind of material more closely approximates the actual work situation, but validation studies are lacking. This test also includes a measure of ability to classify material, but whether this is a true aptitude test, correlating low with intelligence is not reported.

Another approach in clerical aptitude testing has been made recently by the Detroit General Aptitudes Examinations. In addition to name and number checking, test items are included for comparing and checking pairs of geometric design series. On logical grounds use of such material would appear to be valid in the determination of clerical aptitude, but whether performance is based on the same fundamental characteristics as other clerical aptitude tests previously developed, except for the specific factor related to the material content, has not yet been revealed by adequate analysis.

The most significant research in the analysis of clerical aptitude and construction of an instrument for its measurement was done by the Committee on Individual Diagnosis and Training, of the Employment Stabilization Research Institute of the University of Minnesota, organized in 1931 to study economic and unemployment problems related to the depression. This committee, under Paterson as chairman, developed and perfected the Minnesota Vocational Test for Clerical Workers in connection with thorough and extensive investigations of employed and unemployed clerical workers. This test, which has items of two principal types, each developed according to a careful plan, uses the approach pioneered by the Scott Company test and O'Connor worksamples. It has since that time been the most widely used single test for clerical aptitude in industry and for guidance purposes. It is also buttressed by numerous research investigations, of which those of Andrew and of Schneidler are the most searching.

Occupational Requirements

Measures of clerical aptitude, as the term implies, have been found to have greatest differentiating and predictive value among the clerical occupations. The tautology should not permit the personnel worker to lose sight of the fact that within the clerical field there are many different occupations, and clerical aptitude is important to these in varying degrees. Bills developed a classification of clerical positions based on the assumption that every clerical operation consists of three phases: (1) doing the work, (2) checking it, and (3) supervising it. Each phase is presumed to be a step above the other, and the difficulty of a job can be measured in terms of the number and the kind of decisions to be made. Bingham has published tables of classification of clerical positions in eight principal categories, with a separate scheme of classification for typists and others using business machines. The main classification specifies fourteen grades of workers ranging from the level of office boy to that of actuary.

Numerous validation studies have been reported among office occupations, the most extensive being those by the Employment Stabilization Research Institute. Other validation studies have shown clerical aptitude to be important in the work of inspector-packers, bank employees, library assistants, life insurance salesmen, retail salesmen, draftsmen and manual training teachers.

The Minnesota Occupational Rating Scales, which are based on judgments of psychologists and personnel administrators, indicate that clerical ability in the top decile is required for such occupations as accountant, banker, librarian, postmaster, private secretary, social worker supervisor, and statistician. Ability in the top quarter is indicated as desirable for most other clerical occupations, and also such occupations as music arranger, astronomer, builder, department store buyer, editor, educational administrator, employment manager, engineer, journalist, judge, lawyer, linotype operator, army or navy officer, printer, college professor, radio announcer, retail dealer, salesman, county sheriff and writer.

Sex, Age and Educational Differences

Highly significant sex differences on tests of clerical aptitude have been found by all investigators, mean scores for women exceeding those for men. In general about 20 to 25 per cent of men tested exceed the median score obtained by women. This is true at all age and educational levels, but when comparisons are made among groups of employed clerical workers the differences are not so striking, with from 30 to 40 per cent of the men reaching or exceeding the median score for women. Schneidler has pointed out that these sex differences are also accompanied by sex differences in interests. She believes "that there may be a sex difference in interest in clerical detail rather than in native aptitude which accounts for sex differences in scores in this (Minnesota) test. It is quite possible that this supposed sex difference in interest is not necessarily a native one, but brought on by differences in environmental and social pressures and attitudes of the sexes."

Schneidler also found a progressive increase in median score on tests of clerical aptitude from grades 5 to 12. This was accompanied by age differences but since both variables were studied on a school population, the relative influences of maturation and training on the development of clerical aptitude were not revealed. Clerical aptitude tests using name checking correlate with number checking tests about .4 to .6 for men and .7 to .8 for women. Name checking tests correlate about .4 with tests of intelligence but number checking tests show very nearly zero correlation with intelligence. A small but positive correlation exists between clerical aptitude and reading ability; correlation with scholarship is about .2 when scholastic aptitude is held constant.

Studies of personality characteristic of clerical workers in general have shown them to be more introverted and less aggressive than the general population average, but the association of these characteristics with the possession of clerical aptitude has not been reported.

Implications for Vocational Guidance

Conclusions which might be drawn from studies of clerical aptitude which are of significance in vocational guidance are that measures of clerical aptitude would be useful when expressed preferences of the student and other data indicate the possibility that a clerical occupation might be the vocational choice. When certain other occupations are considered, clerical aptitude should also be checked, but in all instances the results of such tests should be studied only in relation to several other variables. In no case is clerical aptitude likely to be the most significant factor.

When persons of younger ages are counseled, use of appropriate norms is important, since with continued education and advance in age, further development of clerical aptitude may be expected.

Persons scoring low on tests of clerical aptitude should recognize that they will compete at a disadvantage in this field of work, but if other indications favor office work, may compensate by a careful choice of work within the field, and attention to training factors.

In employee selection, best results are obtained when a clerical aptitude test is used with a measure of mental ability. If no intelligence test is available, more weight should be given a names checking test of clerical aptitude than numbers checking, but with a mental ability test the latter type of clerical aptitude test is to be preferred.

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G. V. A.

COLLEGE ENTRANCE EXAMINATION BOARD. Founded in 1900 through the efforts of a group of educators to prepare and administer uniform admission examinations for leading Eastern colleges, the College Entrance Examination Board is the oldest educational measurement agency in the United States. It has grown steadily, both in membership (which, in 1946, stands at fifty colleges and universities) and in terms of numbers of candidates for examination (a total of 32,589 for 1945).

The Board consists of the authorized representatives of the participating colleges, and of representatives chosen by educational associations which are members of the Board. The various phases of its work are directed by the Chairman, Vice-Chairman, Treasurer, Executive Secretary, Associate Secretary, Assistant Secretary, and Research Secretary, and by a number of standing committees. The office of the Executive Secretary is located at 425 West 117th Street, New York City, and a staff of approximately eighty persons is maintained in Princeton, N. J., under the direction of the Associate Secretary.

Originally, the Board's work was confined to the preparation, administration, and grading of essay-type achievement examinations taken by students who wished to enter the member colleges, and to the reporting of scores to the colleges. With the introduction of the Scholastic Aptitude Test (an objective examination) twenty years ago, the Board recognized as its legitimate concern the prediction of future academic success, rather than the evaluation of past attainment alone. Since 1942 all of the Board's examinations (with the exception of those in English Composition) have been cast in objective form, and have been administered four times each year at centers established in all parts of the world. The examinations cover the major topics included in the average secondary-school courses in mathematics, physics, chemistry, biology, Latin, French, Spanish, German, social studies, and English Composition. A test in spatial relations is included, primarily for prospective engineering students. A separate examination designed to measure scholastic aptitude is offered, and two scores, representing verbal and mathematical ability are reported.

In addition to this activity, which is a direct outgrowth of its original function, the Board has undertaken many other educational measurement problems, so that its present functions are much broader than its title and original purpose suggest. By no means all of the Board's present work is concerned with college admissions. Rather than furnishing ready-made tests for general use, however, the Board works on contract to meet the testing needs of a limited number of government departments and other organizations, undertaking (in collaboration with the contracting agency) an analysis of the nature of the tests required, the construction of the tests, their administration under controlled conditions, and the obtaining and reporting of standardized scores. These services have been developed very largely since 1941. During the war years, the Board devoted its facilities mainly to military needs. Among its first war tasks was the construction and administration on a nation-wide basis (through ten Regional Offices) of the College Qualifying Tests, used in selecting personnel for the Army-Navy College Training Program. (It is interesting to note that the first of these tests was administered simultaneously to 316,000 candidates—the largest single test administration ever undertaken—and that a total of 600,000 young men were tested in the College Qualifying Test series.) Subsequently, the Board prepared the standardized achievement examinations used for screening purposes in the Navy's College program (V-12). It constructed the Navy's General Classification Test, and, through an affiliation with the Office of Scientific Research and Development, prepared many of the Navy's Service School examinations. At the request of the U. S. Armed Forces Institute, the Board constructed twenty-five tests to evaluate attainment in USAFI courses. At the time of writing, the Officer Selection Test, prepared by the Board, is being administered by the Navy in all parts of the world for the purpose of certifying the educational attainment of Naval Reserve personnel who wish to serve as officers in the peacetime Navy.

The Board's services to the government have not ended with the close of the war. The Navy Department has asked the Board to prepare the examinations for admission to the Naval Academy at Annapolis, beginning with the tests of April, 1946; and certain sections of the Coast Guard's entrance examinations are also to be constructed by the Board. The organization also cooperates closely with the Department of State on all phases of the program of written examinations for the selection of Foreign Service Officers, Unclassified.

In 1945 and 1946 the Board undertook the problem of testing several thousand competitors for scholarships offered by the National Administrative Board for Pepsi-Cola Scholarships. Beginning in 1947 the Board will prepare and administer the preliminary examinations for membership in the Actuarial Society of America. The two last-mentioned projects represent interesting extensions of the Board's services, and will, it is anticipated, be continued on an annual basis.

The above sampling of activities indicates the scope of the organization's testing practice. In addition to, and in support of, its applied phase the Board is pressing a broad program of research in measurement theory and development, integrated through its Research Department.

The Board is self-supporting, drawing its income from the fees paid by candidates for the college entrance examinations. Since it is a non-profit organization, the work which it undertakes for other agencies and organizations is charged on a true-cost basis.

W. W. T.

COLLEGE PLACEMENT OFFICE, FUNCTIONS OF. Successful placement is the final step in the duties of a well organized guidance and placement bureau. In the truest sense guidance and placement are inseparable. To guide a person into a life career with no opportunity for satisfactory placement has no value. To place a person with no knowledge of the individual's fitness for the job is dangerous. Therefore, the ideal goal of a placement office should be to place every one of its registrants in the job for which his talents are best suited, and consequently where he could be happy. It is the responsibility of a guidance and placement office to recognize that everyone has a right to live and have a chance to make a contribution. The only way that one can live happily and make a contribution is to find a job where the abilities he has, whether weak or strong, can be used. It is self-evident that a college graduate has some capabilities which would enable him to make a contribution to society. Therefore, I think the institution from which he graduates owes a duty to help him find his most useful place in life. There are vital reasons why it should render this service; selfish ones, if no others, because some day he will be a taxpayer and maybe a member of the legislature. Certainly he will be a voter and his good will toward educational programs will be of paramount importance.

Know the Registrant

In an ideal guidance and placement office the first essential is to know the registrants; that means, know everything about them that may be pertinent for effective placement procedure. This requires more than merely collecting objective data about those registered. The people in charge of the office must have an interest in human beings as individuals; be very sensitive to human feelings and life situations, and possess a sixth sense for interpreting the meaning behind cold facts. Nearly everyone who registers for placement, along with wanting a job, wants advice on some problem of personal adjustment. They can get such help only if placement directors have enough training and experience to give personal guidance assistance and will accept the responsibility to do so as a legitimate part of their job. Above all, the registrants must not be made to feel that they are begging or asking for favors. Instead it should be emphasized that guidance and placement are part of the service of the college, and that it is the privilege of students and alumni to request assistance in understanding and meeting their needs.

To achieve that ideal placement objective of "the right person in the right place" first of all there must be a clear and complete picture of each registrant including information about background, abilities, training, experience and personal characteristics; in fact everything which would give additional insight aboupt him or her as an employee. In some cases there will be items of information of a purely personal nature that the intelligent placement officer will realize should not be included in the official credentials of the registrant. Such personal information may give the person in charge of placement valuable insight about the registrant but be of no significance to an employer for the vacancy he has to fill. However, frequently such personal data, though irrelevant to success on the job, prejudices the employer and eliminates the candidate from further consideration. It should be the policy of every placement office and the point of view of every member of the staff that each registrant should be given an opportunity to sell himself to his own best advantage on all jobs for which he is qualified.

The initial step in securing favorable consideration for a candidate is to present his record of personal data, academic credits, campus activities, work experience and recommendations in a form that is clear, concise and readily understood by the employer. It is also essential that every candidate be well enough known by one or more faculty members, or former employers, so that they can speak specifically and convincingly about his personal and special qualifications for the job. It should be further added that one of the most important things in getting a job, or a better job, is knowing the right person, at the right time, in the right place.

The question of what information should be included in the registrants' credentials has been determined through years of placement office experience. In addition to the standard questions of name, address, sex, age, height, weight, nationality, creed, marital status, etc., it is often important to know place of birth and part of the country in which the registrant has been reared. The community in which he has grown up may be a deciding factor to the prospective employer. For instance, has he lived in a community dominated by a particular religious denomination, has he lived on the prairies of the middle west or in the mountainous areas of the West? Has he grown up in a village or a large city? Those are facts which a guidance and placement office should know to fulfill its purpose, responsibility and obligation to help each registrant find an opportunity to work where his abilities and personality qualify him and where the surroundings will make it possible for him to be happy.

To gather the general data and personal information needed to give a complete and accurate picture of each registrant, that is to really know him, demands a great deal of hard work, much patience, mature judgment and the kind of common sense developed only through practical experience. Therefore, it is apparent that blank forms alone cannot give a true, complete and satisfactory representation of any registrant; and that interviews and personal conferences with each one are indispensable in professional placement practice.

Know Characteristics and Location of Jobs

In an ideal guidance and placement office the second essential is for the key members of the staff to know all of the major characteristics of the jobs available and as many of the details as possible about the positions. It is a must for the successful placement officer to be familiar with the analysis of jobs in a wide variety of vocational classifications, and to know when and where vacancies exist.

The scope of this phase of the placement service can be greatly expanded through cooperative relations among college placement bureaus in all sections of the country. Each placement director cannot know the personal traits, idiosyncrasies, preferences and prejudices of all of the employers who come or write to his placement bureau for prospective employees, but he can have a close working relationship with other directors of placement, each of whom will be acquainted with the past, present and prospective employers in his area.

For effective placement it is also a primary requisite for the office to be acquainted with the employment policies and practices, which includes a knowledge as to the types of people wanted for various positions in the educational, business and professional organizations to which it recommends applicants. To be able to properly discharge its responsibility in behalf of the registrants a placement bureau should also be informed about the personnel practices regarding insurance benefits, sick leave regulations and retirement policies of the organization also its stability and outlook for future growth. Placement officers must always be alert to recognize those employers who oversell the vacancies they have to fill or who make false representations about job requirements, in-service training opportunities and promotional possibilities.

To acquire such a fund of knowledge about occupations requires time, persistent study and continuous awareness of both the demands of prospective employers and of the varied needs, desires and hopes of the registrants. Placement directors of state supported bureaus are not justified in limiting their placement activities to the superior ability upper twenty-five per cent. Therefore, the range of types of job calls should match the very wide variety of the capabilities and personalities of the registrants enrolled. Only then can the dual goals be achieved of placing the right person in the right job and of rendering the greatest service to the largest number. In order to provide the necessary variety and volume of occupational opportunities the placement bureau must maintain continuous active contact with education, business and industrial organizations, and government, social and community agencies.

Fitting the Registrant to the Job

The third major function, and the one that is most difficult for the placement bureau to do, is to bring the right prospective employer and the right prospective employee together for their mutual benefit. It is by no means a minor aspect of this function to give every registrant his best chance to sell himself. Rarely, if ever, should a placement officer decide for an employer which applicant he should take. Even with all of the data in hand about the job vacancy and the candidate's qualifications there still remain purely personal preferences and biases between the employer and the applicant which may determine the final decision. Therefore, it would be definitely unfair, not knowing both sides entirely, for a placement office to attempt to decide which applicant an employer should take because it would eliminate others who should also have been given a chance to sell themselves.

Perhaps the geographic area where one lives may seem to be an incidental consideration in the selection of an employee. However, the truth is that if an employment man from the extreme east coast is interviewing applicants, the chances are better for locating those registrants who have grown up in that area. Likewise a school administrator from the New England states looking for an elementary supervisor is unlikely to hire a man from the deep south, the far southwest or west unless the applicant has a knowledge of the east and its traditions from having lived there. In this instance, in case a man were recommended from a distant part of the country it certainly would be wise for the placement bureau to make sure that that fact was called to the prospective employer's attention.

Another point which often influences the selection of workers is their denominational affiliation. This is particularly true of school administrators, not because of personal prejudice but due to community pressure. If a denominational school wants a teacher of the same faith it is not likely that one of another faith will be considered, and it is not the business of a placement bureau to argue the right or wrong of the decision. In the interests of all concerned it is the best policy for the placement office to restrict its efforts to giving prospective employers what they want. Some employers will not accept a Methodist; some will not hire a Catholic; others will not consider a Baptist and still others feel they should not employ applicants of some other particular denomination. These decisions are their responsibility, and it is not the function of a placement officer to try to change their policy in the matter. A placement office renders its best service when it calls to the attention of prospective employers all of the registrants who have the personal characteristics and other qualifications of training and experience specified and leave to the employers all responsibility for the decision as to which applicants will best fit the needs and situation of the position.

Guidance Functions of a Placement Bureau

A function of guidance which is neglected by most placement bureaus is supplying high school and college advisers with the facts and figures from long term placement experience in order to keep them informed as to the employment trends in the various occupational areas. While it is not a sound guidance procedure to emphasize in the mind of those who are selecting a vocation the occupations which offer the largest number of job openings, neither is it practical common sense to fail to call to their attention the fields which have shown a steady decline in demand for workers throughout a decade or more and to discuss with them the future outlook.

Frequently registrants need personal or vocational guidance before successful placement of them is possible. Many are in one occupation and think they want to change to another. Their explanations of their reasons for choosing the other field of work may indicate that aptitude tests are needed to help them gain a more objective evaluation of individual capacities for one occupation in comparison with potential abilities for others. Probably some also need more complete occupational information. After supplying this data of personal and occupational analysis the final decision of whether or not to change to another field of work must be left to the person concerned. Hundreds of people, particularly during this upset period, want to go into some other type of work. During the last two years over five thousand teachers left the profession in Michigan alone. These people who want to change occupations after years of experience need special help. Most of them have been disillusioned and think they will be more satisfied and happier elsewhere. The complaints they discuss with the placement officer often are about antagonism toward the boss or their unhappiness in their working and living surroundings. One-fifth to one-third of those who come into a placement office each day present these and other problems of personal and occupational adjustment. To be able to render genuine service to them requires professional knowledge, training, experience and special personality traits in the well qualified guidance and placement worker. It is an exacting job to assist these registrants discover where they will or will not fit successfully and thus help to avoid occupational misfits in the future. It is the most trying part of placement work but the compensation is great in time and money saved for those individuals and the success and happiness added to their lives.

Among the men and women who want to change their occupations, those who are fifty years of age or more offer the most perplexing challenge. Most of them were reasonably successful, but something has gone amiss in their adjustment to their jobs. Ideal guidance and placement procedure does not permit one to give direct guidance by telling the counselee what to do. Instead the counselor must present to him objectively both sides of his problem, and hope that will clarify the issues and enable him to arrive at a choice and decision. Individual backgrounds, interests, likes, dislikes, and abilities are radically different and sometimes unaccountable. One person may suddenly decide to leave the teaching field and hope to go into Red Cross work. She thinks the new work would be to her liking, but she doesn't realize that organization because of lack of specialized training and/or due to fixed age limits is not likely to employ her. Another may be attracted to social work, but does not know that, except during the manpower shortage emergency, most of the agencies require one or more years of graduate professional preparation even for beginning social service jobs. During the past few years there has been a steadily increasing interest in personnel. It has been particularly noticeable among returning service men and women. In many cases those interested have a misconception of the real nature of the work. In all fields requests for placement in personnel exceed job calls.

The lack of complete or even of correct information about the occupations that dissatisfied people are contemplating is amazing. For example, one will say, "Very soon I will have completed my years of retirement in teaching. Then I want to become a buyer in a department store." When asked about experience, probably she has not had any, but thinks it is enough that she has shopped with and for her nieces. Besides she is sure she would enjoy the travel opportunities she has heard that the job affords and which she is confident will add new interest to life. She thinks that department store buying is just the position that she wants. No one has pointed out to her, or she does not want to face the fact, that because of age a merchandising manager would be convinced that she probably does not have the energy for the nervous strain of such a strenuous job.

Another common reason for wanting to change jobs after middle life is desire for a milder climate in which to work and live. Unfortunately, they usually expect to be able to transfer to a top level job at a salary equal to what they are getting, or higher, and that they can step into an executive position on the basis of remotely related training they have had. Placement officers know that to accomplish that is next to impossible. Furthermore, to place registrants beyond their qualifications of training and experience often results in frustration to the employee and brings unfavorable criticism on the placement bureau both from employer and employee. Because the placement office may be the last contact which a student has with his college and it may be the only one which an employer has, it can be a vitally important agent in making friends or enemies for the institution. The guidance and placement office should continue its services to alumni as well as the present graduating class. In fact, four out of five of the placements of this bureau are of alumni and many of them result from past placements of other alumni who now themselves have good jobs to offer. The general practice of helping alumni to find continually better jobs is fundamentally sound for it is one of the chief sources of building a steadily increasing volume of job openings.

T. L. P.

COLOR APTITUDE TEST. This test was devised by a committee of the Inter-Society Color Council under the co-chairmanship of Forrest L. Dimmick and Carl E. Foss, to determine an individual's relative efficiency in the use of visual perception. Color aptitude is conceived to be a skill involving the factors not only of retinal sensitivity but also of training, of motivation and of dexterity. These factors are exhibited by the accuracy and speed with which a subject matches a number of color samples.

The test utilizes finely graded saturation series of four different hues and one neutral brightness series. The hues were chosen to give, incidentally, maximum difficulty to subjects with deficient color vision. However, the test requires too fine discrimination on the part of normal subjects to be satisfactory as a test for "color blindness," and is not recommended for that use.

The test material consists of duplicate sets of 50 chips each, 1 inch by 1¼ inches. They differ by units of .1 Munsell color steps, and the series approximate straight lines on the I.C.I. diagram. Specifications are given in spectrophotometric terms and in Munsell notation. Conformity to specifications has been checked both instrumentally and by visual judgments.

General validity of the scores requires administration of the test under standard conditions of lighting, timing, etc. Specific directions for giving and scoring the test are furnished with the sets.

Standardization was made on 500 subjects including expert industrial color matchers, college students and general population. Normal and percentile distribution of scores are given. Further analysis of results into score per match and score per minute has been made to show the contribution of the factors of accuracy and of speed. Normal and percentile distributions of each factor are given.

Studies have shown that scores can be improved with training. Low scores improve most as motivation is improved and skill is acquired. In any case, a score level is approached by a given subject. At this level, variations occur of the order ±5.

General validation depends on the similarity of the task to those of industrial color matches. Specific validation within a particular company or laboratory has given a high level of agreement with the experience within the group, but no quantification of this experience has been possible.

Materials for the 1944 Experimental Edition of the test were produced on a non-profit basis by Carl E. Foss and distributed through the Munsell Color Company, 10 East Franklin Street, Baltimore 2, Maryland. Distribution of this Edition is nearly complete and production of a supplementary edition is in progress.

Development of the first edition of the test is described in the Journal of Applied Psychology, February, 1946, p. 10 ff., and in Textile World, May, 1946, p. 84 f. Norms for the 1944 Edition are given in Textile Colorist and Converter, November, 1945.

F. L. D.

COLORBLINDNESS. To understand the character of colorblindness, the relative abilities of individuals to compare narrow bands or single wavelengths of the spectrum must be known. The major fact of normal color vision is that any part of the spectrum may be matched by combining three properly chosen parts of the spectrum. From this it is said that normal color vision is trichromatic. Individuals possessing such vision are Trichromats.

Those whose color vision is defective fall into three general classes. 1. Anomalous Trichomats, or persons who confuse parts of the spectrum, but who, notwithstanding, require three primaries to make a spectral match. 2. The color-weak individuals, or the Dichromats, as distinguished from those persons who are said merely to have anomalous color vision. These are individuals who confuse large portions of the spectrum and can match any part of it with a mixture of two primaries, and can match a particular part of it (yellows and blue-greens) with white. There are three types of dichromats: (a) Protanopes, who confuse green, yellow, and red, and match blue-green with white. The brightness perception of such individuals is depressed in the red end of the spectrum, hence they are frequently called red-blind. (b) Deuteranopes, who also confuse green, yellow, and red, likewise matching a point in the blue-green part of the spectrum with white, but who have a distribution of brightness perception much like normals. (c) Tritanopes, who differ from the first two groups in that they match a point in the yellow with white. According to a certain theory of colorblindness, this group is called blue- or violet-blind. 3. Those who are fully colorblind—the Monochromats. Various parts of the spectrum are confused with each other and may be matched by proper manipulations of intensity. This class includes two types of individuals: (a) Those whose brightness perception follows the visibility curve for rod vision. They are the Scotopic Monocromats. (b) Those whose brightness perception corresponds to the distribution of cone vision. They are the Photopic Monochromats.

Notwithstanding the impression this classification may give that color-defective people fall into very distinct classes, a number of authorities emphasize the fact that in a large population of color-blind, sharp distinctions between classes disappear.

Defects in color vision are more common in men than in women. Various groups tested show that somewhere in the region of 7.0 to 8.0 per cent of the male population and in the neighborhood of 1.0 per cent of the females are affected. Actual figures vary from one authority to another, in part on account of the tests used.

There are six general types of tests used to distinguish between individual abilities: (a) Sorting tests, of which the Holmgren Wool Test and its modifications are examples. The standard form of the Holmgren test consists in 125 small skeins of yarn, varying in shade and hue, to be sorted with reference to three large standard skeins. (b) Matching tests. Matching may be done by the use of disks with sectors of two or more different colors which, upon rotation, fuse into a new color to be matched with a standard. Matching may also be done by pairing sets of colored papers, or it may be done by use of optical instruments for producing colored fields, such as the Nagel anomaloscope or the Helmholz color-mixture spectroscope. Study with the latter instrument is the most exact of all. Its use is virtually confined to basic laboratory research, for it is not well adapted to practical industrial testing. (c) Naming tests, of which the Edridge-Green Lantern Test is an example. Such tests are of particular use where not only the ability to match similarities or to discriminate differences, but also to identify color (signals) is required. The Edridge-Green Lantern Test has been applied to the testing of railway personnel. (d) Discrimination and Similarity tests. In tests of this type any one of several objectives may be involved. The number of a subject's just discriminable hues may be determined. Hue recognition and meaning, or ability to distinguish degrees of saturation may be tested. Included in this general group are pseudo-isochromatic charts with their "vanishing patterns" or "hidden figures." Each chart consists of a number of patches or disks of one color forming a digit within an area of other similar-sized patches of different colors. The colors which constitute the digit and the field are so chosen as to be identical or confused except by individuals with a certain degree of excellence in color vision. Some selection between protanopes, deuteranopes *et al.* is possible by use of the now-existing charts. Stilling plates were an early form of isochromatic charts, whereas the Ishihara plates are the form most used today. (e) Serial arrangement of hues and saturations. These are essentially tests requiring the ability to analyze color experiences into their three aspects of hue, brightness (tint) and saturation (chroma). Of this class, the tests of Myers, Murray, and Farnsworth are examples. (f) Reproduction of color patterns. In this type of test the subject must reproduce on a blank design, by means of paints or crayons, the colors of a geometrical design. In the response of the red-green blind, green is typically replaced by a light brown; red with blue, etc. Although this type of test roughly indicates the colors a subject confuses, other features tend to obscure certain of the subject's reactions to spectral saturation that one might wish to know.

Color discrimination and identification in everyday situations may be looked upon from the standpont of camouflage. Everyday color combinations may be discriminable or they may not, depending upon the individual. When they are not, the individual wrongly sees surfaces juxtaposed or he may mistake them for an indistinguishable chromatically homogeneous surface. In such cases we may say camouflage has resulted. In war, camouflage is intended. In everyday life, camouflage is incidental and occurs from defective color-vision. For an area to be visually hidden from the deuteranope or protanope it is necessary only that it be neither lighter nor darker and neither yellower nor bluer than its surroundings. Whether it is redder or greener is immaterial. In the grosser features of ordinary camouflage the fact that the protanopes are less sensitive to the red end of the spectrum than the deuteranopes is of no separate special consequence. But there is a significant difference between the abilities of those who are red-green blind and those who are only red-green weak.

Two surfaces, although appearing to match in hue, may be different in their reflectances of certain portions of the spectrum. Such surfaces may therefore possess spectral differences undetectable even to the normal observer. Such differences are also invisible to the deuteranope and protanope. Pairs of colors of this sort are called pseudo matches or metameric pairs. It happens, however, that a metameric pair of colored surfaces satisfactory to the normal observer will generally be a little off-match for an anomalous trichromat. Whereas this might be of use in detection of intended camouflage, as in warfare, the ability does not in ordinary affairs constitute superiority to normal color-vision.

Reddish-browns distributed among yellowish-greens are common in landscapes and certainly not uncommon in the visual fields of observers confronted with objects closer at hand, such as room decorations and objects in books, magazines, and on desks and work benches. Both the reddish-browns and the yellowish-greens appear to be yellowish-brown to the protanopes and deuteranopes, hence what is a differentiated pattern of colors for normals tends toward or actually is a uniform yellowish-brown area for such observers. Only areas too light or too blue will tend to stand out.

Thus, while it is often intimated that colorblind individuals, owing to their inability to make brightness discriminations unhampered by those of color, could be expected to be better for certain occupations than the normal-sighted, there is no substantiation for this found in any well-known studies. In fact, a study made by Miles and Craig on department-store salesmen indicates that whereas the incidence of colorblindness is probably not substantially less among such individuals than in the general population, the defect nevertheless constitutes a liability both for the employer and employee. There are facts which indicate that color-defective individuals must use a number of substitute devices including the reliance upon associates to avoid predicaments or to extract themselves from them. Such individuals have been somewhat successful in masking their deficiencies from their employers, owing to poor means of rating of employee worth, etc.

Various writers account for the relative success of the color-weak and colorblind in dealing with supposed color judgments in such performances as automobile driving. Such individuals get along, in part, by knowing whether the red traffic signal is above or below the green and yellow ones, etc. Suggestions have been made regarding standardizing different shapes for the traffic signals of different colors, but this would not compensate for the lack in ability to detect color. Colored signals can be seen as colored spots of light much more quickly and at greater distances than as small squares, triangles, disks, etc.

Whereas the failure to make proper color matches in department stores, etc., may have economic and personal aspects, the ability to detect and interpret formal traffic and railway signals and flares, or to be able to gain the significance of patches of terrain in flying, are serious matters. Selection of personnel to insure the proper performance in many occupations will always be a necessity. The difficulty that confronts the testing program in color-vision at present is the accurate assessment of various degrees and types of deficiency. The monochromats, few in number, can easily be detected, but the color-weak and color-anomalous cannot so well be detected and properly evaluated.

While colorblindness and color-weakness are congenital they may also be acquired. An individual may develop a central or peripheral visual field defect through disease in the retina or optical tract. A very common affliction which results in central field defects for color (and for form as well) is multiple sclerosis. Certain other non-infectious diseases result in optic neuritis and eventually in reduction in or loss of color discrimination. Pernicious anemia, leukemia, diabetes, and the deficiency diseases tend to impair color-vision. Various occupational toxins such as carbon disulphide, lead, etc., may result in loss of color discrimination. Tobacco, alcohol, and presumably, in some cases, certain therapeutic drugs may cause visual trouble including impairment of color vision. Periodic tests for color-weakness and colorblindness are indicated both on this account and on account of reduction in color discriminating ability with increasing age.

Color perception is so intricate a performance and so complexly related to occupational requirements that color-vision testing can only be carried on by the seasoned expert. As yet no single test used in routine procedure is able precisely to define the individual's characteristics. The production of better tests for use in practical color testing is still in process. No fully comprehensive survey of the actual color performance requirements of the various occupations has been made and no set of standard specifications is in existence.

It should be clear that occupations requiring close color matches are contraindicated for those who are color-weak. Since such occupations are obvious when they are considered, the providing of a list of them here is not necessary.

Color-vision tests should be considered a virtually universal requirement, for there are occasions when the use of color discrimination is demanded outside of the routine of the individual's occupation. It is not fair to the individual for him to be unaware of his own limitations. Service pipes, conduits, etc., in factories and elsewhere, and other objects colored for the purpose of telling their danger, occasionally are involved in the experience of most everyone. Within the individual's occupation, he may standardize his procedures so well as to be able to do the right thing at the right time, but when thrown into new situations may be at a loss. So long as red remains the standard indication of caution and danger, it is well for everyone to know whether he can see red as red. It is often well for others to have that same information about the individual, too. Public opinion should be educated away from holding color-deficiency as any sort of a social stigma.

S. H. B.

COLOR VISION TESTS. In general, all color vision tests involve comparisons of at least two colored objects or lights, and faulty matches or comparisons tend to disclose subjects exhibiting anomalous color perception.

Since 1875, when the first semi-quantitative color vision test was devised by Holmgren of Sweden, there have been many color vision tests developed. Of these, perhaps two types of tests have been most widely used. These are the Holmgren yarn test[1] and its modifications such as the Jennings test,[2] and the vanishing pattern or pseudo-isochromatic charts devised by Stilling[3] and improved by Ishihara of Japan. The Ishihara Charts[4] in the various editions, or combinations of the Ishihara and Stilling Charts such as in the American Optical Company Pseudo-Isochromatic Charts,[5] and the Jensen test[6] have been perhaps the most widely used of all color vision tests due mainly to the ease and rapidity with which they may be given.

Holmgren Yarn Test

In usual form as manufactured by reliable firms, the Holmgren yarn test consists of from 40 to 125 skeins of wool yarn of various hues, saturations, and luminosities. In addition, there are usually three standard comparison skeins. These latter are usually an unsaturated or pale green, an unsaturated rose or purple, and a saturated red.

There are many ways of performing this test. Perhaps the most general method used is to select the green standard skein and instruct the subject to select all other skeins that are pure green using the standard for comparison. Greens such as blue-greens or yellow-greens are not to be considered matches. If the subject makes proper selections without undue hesitation, then ordinarily he is considered to have normal color vision. In the event that he includes skeins other than pure greens, as for example browns or reds, he is required to select yarns matching the other two standard skeins. The degree of color vision defect is roughly proportional to the number and kind of mistakes made, provided the subject has not had occasion to learn matches by repeated practice.

Today the Holmgren yarn test has been largely superseded by other tests due largely to the length of time required for the test and, as usually performed, the inability of the test to classify the type or degree of color blindness. In addition, some color deviates can pass the Holmgren test using as matching criteria luminosity and saturation differences rather than hue differences. A further objection occurs due to the large visual angle subtended by the test skeins. Critical color vision tests always involve a small visual angle.

Pseudo-Isochromatic Charts

The most widely used type in the United States is either the Ishihara[4] or the American Optical Company reprint[5] of selected Ishihara and Stilling Charts. The charts that comprise these tests are composed of a background of various sized dots of varying hues, chromas, and luminosities in random distribution. Upon this background is usually a number, or a geometric pattern in contrasting hue, usually such that color deviates will either be unable to observe the number or will see a confusion number. The charts are so constructed that only hue contrast exists between number and background.

These tests should be administered under very definite conditions. These are as follows:

I. Test charts should be one meter from subject.
II. Test charts should be illuminated by daylight or artificial light having the same spectral distribution as daylight, of approximately 25 foot candles illumination (not sunlight and not mazda light).
III. Test objects should be exposed not longer than 3 seconds.
IV. Subject should not be allowed to trace out figure or pattern.

Under these conditions, it is possible to set up critical performance scores to determine whether or not the subject has deficient color perception, provided the subject has not had a previous opportunity to study and familiarize himself with the charts. According to Hardy, Rand, and Rittler[7, 8, 9] the critical score for the various editions of the Ishihara test is 60 per cent. This means, that if a subject can read correctly 60 per cent or more of the charts in the test his color vision is considered normal. If he reads less than this percentage correctly his color vision is deficient in some respect. According to Hardy, Rand, and Rittler no conclusions as to the type or degree of color blindness, other than a deficient red-green discrimination, can be determined by these tests alone. Since, however, the main purpose of tests for color blindness is to separate normal from abnormal this is not a serious objection in so far as vocational guidance advice is concerned. More critical evaluation of the color deficiency should be done by experienced examiners with the use of more critical tests. Murray[10] has recently reviewed exhaustively the many types of tests for color blindness.

In the American Optical Company reprints of the Ishihara charts the above critical score of 60 per cent cannot be applied, apparently due to less precise reproduction of the charts. Hardy and his co-workers found that certain color deficient subjects could pass all the charts, while some normals fail a proportion of the test. The remainder of the charts in the American Optical test are copies of Stilling's[3] charts. There are, apparently, no critical scores available for these plates. A conservative attitude toward this test would be to consider anyone who fails 30 per cent or more of the charts a possible color deviate and examine him by other methods.

In addition to the above tests, Jensen[6] in 1935 devised a variation of the Ishihara test using instead of numbers, bars on a confusion background resembling the hands on a clock dial. The recognition of the position of this bar in the various charts is the purpose of the test. The test is limited because it contains only three test charts. This is an insufficient number to use for a test of color vision. It is, however, an advance over the Ishihara or Stilling type of chart as it can be used for children and illiterates.

References:

1. *Holmgren Yarn Test for Color Blindness.* May be obtained from any optical or surgical supply house e.g., American Optical Company, Southbridge, Mass., or C. H. Stoelting Company, Chicago, Ill.
2. *The Jennings Self-Recording Test for Color Blindness.* A. S. Aloe Company, St. Louis, Mo.
3. *Stillings Pseudo-Isochromatische Tafeln zur Prüfung des Farbensinnes.* E. B. Meyrowitz Surgical Instruments Company, Inc., New York, N. Y.
4. *Tests for Colour-Blindness* by Professor Dr. S. Ishihara. C. H. Stoelting Company, Chicago, Ill.
5. *Pseudo-Isochromatic Plates for Testing Color Perception.* American Optical Company, Southbridge, Mass.
6. *Tests for Color Blindness Visual Acuity and Astigmatism* by Milton B. Jensen. Psychological Corporation, 522 Fifth Avenue, New York, N. Y.
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K. B. S.

COMMUNITY OCCUPATIONAL SURVEY. The vocational counselor without information about the occupational distribution in his community is like a draftsman without a T-square, like a carpenter without his saw. Though he may have skill, experience, and wide general knowledge, he cannot give adequate vocational guidance unless he knows the framework into which the individual he is counseling must fit.

The community occupational survey is a method of examining this framework. It supplies data on the number of individuals employed in the community and on the occupations in which they are engaged. It may furnish other details, for example, the sex or age distribution of workers, but its aim is extensive rather than intensive. Its purpose is not to supply detailed information on particular occupations but to obtain a bird's-eye view of all or most of the occupations in the community which reveals them in their size relationship to each other. The counselor is also interested in more specific descriptions of each of these occupations and with changes in them and in the total picture, but studies of particular occupations and studies of trends involve other techniques or different emphases than those characteristic of the community occupational survey.

The U. S. Decennial Census of Occupations has long been the major source of information on occupational distribution in communities where the population is 25,000 or more. But since Census occupational data are collected only every ten years, become available only at a considerable interval after their collection, and do not always supply all the break-downs or items that may be needed, even these larger communities, interested in vocational guidance, find it desirable to conduct surveys which supplement those of the Census. Such studies were undertaken in some 100 and perhaps more communities in the decade from 1930 to 1940, in large cities, in towns, and in rural villages. More than half of these studies were sponsored by public schools or school systems but a wide variety of agencies were represented among other sponsors and cooperating agencies. The marked and rapid changes in communities wrought by the war and the need for concentrating all energies on war tasks have discouraged this type of research temporarily. But the need for it grows more evident as the problems of men and women returning to their communities from war service confront vocational counselors. Two distinct approaches have been used in community occupational surveys. One attempts to cover all the residents of a community. This approach has been used not only in the U. S. Census itself, but also, for example, in the Rhode Island Census of 1936 and in the Rockland County, New York, survey of 1934. In most community occupational surveys, however, the information has been obtained at the employing establishments and covers the occupations of those working in the community rather than the occupations of the residents. These may be similar but are seldom identical.

The steps in a community occupational survey follow the pattern of other types of social surveys. Problems of planning, of working out schedules, of publicity, of training personnel, of checking, of hand and machine tabulation are similar to those encountered in any comprehensive survey. These and other problems and the techniques for handling them have been outlined in detail in the bulletin "Community Occupational Surveys" (Government Printing Office 1943) under the headings: Preliminary planning; determining scope, content, and method; preparing work plan and budget; preparing forms; introducing the survey; directing survey personnel; collecting the data; editing and tabulating the data; interpreting the data and preparing the report; using the report.

Certain problems, however, arise out of the occupational character of the survey. So many possible uses may be made of such data and so much additional information obtainable from employers may be desired on the part of cooperating agencies that there is danger that the original purpose may become subordinate or altogether lost. A survey originally planned for obtaining information for use in vocational guidance may become a broad social survey more difficult to finance and more unwieldy to conduct. It is important from the start to have a clear statement of purposes, primary and secondary, so that these may be constantly kept in mind as the work proceeds. If additional information is desired, for example, on the environment of young workers or on the job value of training received locally by employees, it may be desirable to plan a supplementary youth survey or a follow-up study rather than to attempt to obtain too much or too varied data in a community occupational survey.

Another problem is that of coverage. Because the workplaces of those in certain occupations, are scattered (for example those of self-employed professional workers, of those engaged in domestic service, of farm workers), the effort to cover these workers is out of proportion to that required to cover other occupational groups. For this reason, they are often omitted in community occupational surveys where the source used is the workplace rather than the residence. It is possible, however, to obtain at least an estimate of their number through such sources as professional organizations, telephone and other directory listings, county agricultural agents, household samples obtained through public school pupils or in representative neighborhoods.

A representative sample instead of complete coverage may be used for the entire survey. Sampling is difficult because of the problem of covering all industries and of adjusting the sample to obtain a proportionate distribution according to numbers employed. The sampling techniques worked out by Roper for a survey of New York City described in *Occupations* April 1941 and that used in the surveys of occupational opportunities in Atlanta and other cities in Georgia by the National Youth Administration of Georgia in 1938 and 1939 suggest appropriate sampling methods.

The most difficult problem of all is inherent in the variety of occupations likely to be found in even the smallest community and, often, in the unfamiliarity with occupational terminology of those who obtain the information. The use of the occupational titles and group classifications of either the U. S. Bureau of the Census or the U. S. Employment Service which have been made comparable to each other, is essential if the data gathered are to be of maximum usefulness. The "Alphabetical Index of Occupations and Industries" (Bureau of the Census) or the "Dictionary of Occupational Titles" (U. S. Employment Service) both available from the Government Printing Office may be used to translate local terms into occupational classifications which make the data comparable on a national basis. They also make it possible to present them under accepted groupings while retaining the occupational detail so necessary to their usefulness in vocational guidance.

Because of the degree of cooperation required to obtain occupational data on the entire community and because of the size of the task, the participation of all agencies in the community concerned with vocational guidance and with occupational research is especially desirable. The planning group to work out details may be kept small, but joint sponsorships and participation of a number of agencies will lend needed support and prestige to the project. In Monroe, Michigan, for example a 1940 inventory of job opportunities for youth was undertaken by the Michigan State Employment Service in cooperation with the National Youth Administration, of Michigan, the Institute for Human Adjustment of the University of Michigan, the Michigan State Board of Control for Vocational Education, and the Monroe Public Schools. Participation by the personnel of such agencies and by students in schools and colleges results not only in data useful to their agencies but in the important by-product of a first-hand community experience on the part of the individuals who participate.

The resources, local, State, and Federal, that may be called upon for background information, for technical consultation, for sponsorship, for participation in other phases of the survey are increasing as progress is made in organization to meet community needs. Among those mentioned in the earlier occupational surveys are the following:

Schools, colleges, and local educational groups
Employment centers
Chambers of Commerce and other associations of employers
Labor organizations
Service clubs and women's organizations
Social agencies, including community councils and chests
Newspapers, radio stations and other publicity groups
State Departments of Education and of Labor
Foundations and philanthropic organizations
Headquarters, regional, State, or local offices of such Federal agencies as:
U. S. Bureau of the Census, U. S. Bureau of Labor Statistics, U. S. Office of Education, U. S. Employment Service, and the U. S. Department of Agriculture.

Valuable as is the experience of the use of wide resources in a cooperative community project of this type, the function of the survey is not fulfilled until the occupational data are put into such form that counselors and others concerned with the information may use them. Beyond this, there is the need for keeping the data up-to-date by subsequent surveys or by sample checks or estimates. This is the most difficult task and one seldom carried through. Until our nation-wide system of social security or of employment exchanges provides local communities with an easily accessible perpetual inventory of their most valuable asset—their workers—counselors in public schools, in employment offices, in social and other community agencies will find it desirable to conduct community occupational surveys periodically to take stock of the local occupational situation.

M. W. Z.

COMMUNITY RESOURCES, USE OF. Knowledge of the world of work requires actual contact with jobs and workers. The extensive literature about occupations is valuable, indeed indispensable, in understanding this vast field. Yet the pedant can never understand. No one can know this field without observation of workers, familiarity with tools and tasks, and sufficient participation in some kinds of work to see the experience from the "inside."

The youth who is planning his vocation needs the same realistic approach to the study of occupations and vocational aptitudes. Many modern youth have had little experience in work even in their homes. Former generations of young people found normal contacts with a fairly simple world of occupations; parents, friends, neighbors were the vocational guides; daily life included considerable work. The present generation of youth must see in order to understand the eight-hour-day worker, the minute division of labor, and the responsibilities of an occupation.

Vocational guidance must go directly to the community for these resources. If either the guidance officer or the youth is to understand the literature of guidance, he must turn to the vivid record of the community. He cannot participate in all occupations, but he can build the foundation for realistic planning. The practical man makes a genuine contribution to vocational guidance.

Methods of Using Community Resources

It is probably true that the bulk of vocational guidance is still rather casual. Parents and friends continue to be major resources in vocational guidance and placement. Even when an institution adopts a systematic program, the fortuitous acquaintance or the accidental bit of information may have considerable influence.

There are systematic methods used by guidance agencies in bringing young people into contact with the actual occupations of the community. One of these is the careers conference. Speakers are brought from the community to describe the work of specified vocations and the opportunities offered in the future. This plan usually evokes active interest in vocational issues. It may open the way for the use of more adequate methods. The careers conference in itself, however, is of limited value: some speakers are ineffective for lack of information or of appeal to youth; some may be too effective in their personal appeal; some tend to advocate or oppose rather than describe; the sampling of occupations must be limited by the machinery of the conference, and seldom corresponds to the breadth of the need of youth. Essential phases of guidance beyond occupational information cannot be included within the time limits of a conference. Unless the total program makes provisions for these services, the careers conference may be a spectacular and easy substitute for a guidance program.

Young people are frequently referred to a representative of a vocation for discussion of the opportunities, advantages and disadvantages of such work. This may be a part of a careers conference, or it may be arranged for individuals or small groups as the need arises. Consultants or committees are sometimes appointed as resource persons. The value of interviews with these occupational representatives depends upon the preparation of the young person for the interview on the one hand and upon the adequacy of the presentation by the occupational representative on the other. The method is of value as a supplementary resource.

The observation tour gives opportunity to the uninitiated for much valuable experience. It offers opportunity to observe workers at their tasks and shows the sequence and complexity of operations in modern industry. The information gathered is general and is prone to be superficial unless preparation for the tour has been made. Excursion guide-books are published by some larger school systems, *e.g.* Cincinnati, and a considerable literature describes successful methods. The School Journey Association of England has been active in this work for a number of years. Some extended tours have had vocational information as a major objective, and advocates of the method have emphasized the stimulation which such an experience offers to many young people.

The tour is sometimes supplemented by the observation of a single worker at his tasks. This may continue for a number of hours, offering the observer the opportunity to see in some detail a limited number of operations. Preparation for this experience and some report of the findings are important for satisfactory results.

The central method of contact with occupations is the try-out. The beginner, in theory at least, works on the job for a period of time to test his aptitude for it. This is the ideal method of vocational planning, but there are serious practical limitations. Since the number of try-outs must be limited by time, other methods of choosing the fields for the try-out must precede. The try-out is further limited by the beginner's lack of skill. He is likely to be working near the job he is considering rather than on the job itself. The higher the level of the occupation, the more impossible is a real occupational experience in advance of complete preparation. Yet, the try-out of a few occupations over a period of time, when the learner is assisting the worker who is performing the tasks under consideration, must frequently be a major resource in vocational guidance.

Cooperative education accepts vocational planning and placement as the focal point in the modification of traditional education. The student is in school for a part of his time and spends the other part on a job. This serves as a general introduction to the experience of work, a source of income, or a specific job try-out. During the war, many schools made such arrangements for war-jobs.

There are many modifications. The student may divide the day between school and work. This may mean work after school hours for a few weeks as in the Manhattan, Kansas, program, half days at school with the other half at work as in the depression-born plan in Aberdeen, South Dakota, or the war-time work-study plan in Oakland, California. The alternating periods of work and study may be longer: students in the New York City program of cooperative training alternate periods of one week; the York, Pennsylvania, plan uses a two-week period; the Pasadena war-time program uses four weeks as the unit; Antioch College, where travel is involved, uses six weeks. Students usually work without pay when the hours are brief, but they receive regular compensation when hours and tenure are longer. The Pasadena plan is one of many which offer school credit toward graduation for the work experience; some schools assign work experience as a part of a regular course, as in the office practice course of the Rock Island, Illinois, schools; some offer no academic credit for the work. Students are accepted in these programs for a variety of reasons—financial need, inducement to remain in school, work experience, or job try-out. New York City limits the enrollment to those with an intelligence quotient of 115 or less.

These programs made important contributions during the years of depression and later during World War II. Baltimore reports that one-third of the junior and senior high school students had part-time jobs during the last year of the war. The permanent place of these plans in the secondary school is probably as a phase of terminal education. They are most serviceable as preparation for office work and the skilled and semi-skilled trades. The reports in the literature show a favorable placement and tenure record for the graduates. There is evidence that the job frequently loses its function as try-out through the preoccupation of the student with the pay and its accompanying social advantages. Evaluation and interpretation of the experience must be emphasized if the guidance values are to be preserved. This should be a responsibility of supervisors on the job and in the school.

There are other methods closely related to these which are frequently used. Motion pictures (q.v.) present in a short period of time a record of occupational tasks. They broaden the scope of the observations which are possible in limited time. The trade magazine is a valuable means of acquainting the inexperienced with practical phases of an occupation. Dramatizations have been prepared which are effective, *e.g.*, in the preparation of applicants for the interview. Such methods enrich the background of many in their planning.

Community Organizations as Resources

Many individuals and organizations of the community offer resources to the alert guidance officer. Educational agencies are particularly ready to give such services. Schools are generally the most active institutions in the work of vocational guidance. It is usually the school which is seeking the resources of the community for this work. When another agency is leading the program, the school system is the most obvious source of aid. The school record, including the items found on the cumulative record of the student, is recognized as indispensable in guidance. The teaching staff frequently furnishes human resources which are so important.

The library is often the repository of much organized information. There are books describing occupations in general, occupational pamphlets and monographs, biography and fiction with a vocational background, and works which introduce individuals to the best methods of making a vocational choice. The file of occupational information in accessible form is a major contribution to vocational guidance. The program for veterans of the Queens Borough Public Library of Jamaica, New York, illustrates the services which the better libraries perform.

Adult education councils, evening schools, museums, college alumni associations, parent-teacher associations and similar educational agencies offer potential human resources for the guidance officer. They are frequently the most active of the community groups within the respective areas of their interest.

There are a number of avocational interest groups which are of value in this work—hobby clubs and shows, fairs, extra-curricular activities of the school, summer camps, and other recreational facilities of the community. Much of this is not organized for vocational guidance, but it furnishes resources of value in the program.

The social agencies of a community often offer direct contributions. A psychological clinic frequently offers professional services beyond the ability of a guidance agency to provide, and many a problem will be clarified in the light of a report from such a clinic. Health centers, clinics, and social service agencies have similar services to give, within the areas of these programs. Many churches have active work for the youth, and the Y.M.C.A. and Y.W.C.A. often offer a program of vocational counselling, training, or placement. Special services for the handicapped are given by interested organizations. The work of such groups as the Boy Scouts and the Girl Scouts have obvious vocational relationships, although much of their service is completed by the time most young people are dealing definitely with vocational problems. There are many farm organizations which give excellent vocational service to the community. The 4-H clubs may represent groups which are particularly valuable among the farm youth of America.

Many service clubs are actively interested in the field of guidance. Their programs are not always professionally adequate, but they offer resources of primary value in many a community. Where the national organizations encourage local activity in this field, as in Rotary and Kiwanis clubs among men, or in Altrusa or Business and Professional Women's clubs among women, local interest may be readily stimulated by any active guidance unit. Many employers and other individuals familiar with the practical phases of vocations can be brought into cooperation with the local program through such organizations.

There are many business and governmental agencies which have major contributions to offer. Business establishments usually give generous cooperation. The Chamber of Commerce is often the source of much systematic information. The United States Employment Service is the central organization of the community in the matter of placement especially in industrial jobs. These offices have available the rich resources of this active governmental agency, and their personnel is likely to be well trained for such services. Private placement agencies vary in significance, but the better ones are repositories of information and contacts with positions. They often offer the best contacts with positions on the higher levels.

The trade union has become the key organization of the community in placement on many jobs. Collective bargaining contracts tend to develop strict hiring provisions, a limitation of apprenticeships, and a system of rotation among union members in placement. Youth who are looking toward the crafts and other occupations in which the unions are strong need the guidance which the active union officials are prepared to give. Cooperation by union men in this program is readily obtained, and these services are of increasing importance.

The Coordination of Community Resources

The wealth of community resources for vocational guidance does not guarantee adequate services in the field. Some units have little independent value; services overlap while leaving important areas untouched; few offer professionally prepared personnel for the program. The resources are present with an abundant good will, but they are potential rather than actual in many communities.

Some plan of organization is necessary in order to bring satisfactory results. This is best achieved through a coordinating council in which these community resources are represented. Each of the units becomes acquainted with the services of the others; the leaders learn to think less in terms of report-worthy activities by individual organizations and more in terms of the needs of the community.

Community councils have been formed with vocational guidance as the single objective; others have associated this program with delinquency prevention, recreation, and social services for youth. Returning veterans and displaced war workers have focused much attention upon the needs of adults in occupational adjustment. If the program of vocational guidance is to be developed through a coordinating council of this broader type, attention must be directed to vocational needs lest more dramatic fields monopolize the interests of the organization.

Coordinating councils are usually established under the sponsorship of one of the cooperating groups. In the background of such a movement, there is a citizen or a small group to whom the need is most evident. Officers of the Occupational and Guidance Service of the U. S. Office of Education have been active promoters of such councils. Acting through one of the community organizations, the sponsors gather representatives of agencies which are most active in this or related fields. The list of cooperating groups varies in different communities, but it typically includes educational institutions, parent-teacher associations, libraries, social and welfare agencies, health associations, juvenile courts, service clubs, veterans' units, chambers of commerce, labor unions, employment agencies, religious bodies, fraternal organizations, minority groups, and agencies of government.

The organization of such a council typically provides for a general body consisting of the representatives of the cooperating organizations, an executive committee which supervises the program and furnishes much of the leadership, and committees or commissions which deal intensively with defined phases of the general program. As in other community projects, the larger the number of active participants, the more successful the effort is likely to be.

The program of such a council frequently begins with a community survey (q.v.) of vocational opportunities. There follow such tasks as the definition of the functions of cooperating groups, arrangements for referrals for the most efficient service, plans for financial support of the council and at times of cooperating units, the recognition of areas of service which are not covered in the community, the allocation of new responsibilities, and the general development of the community program and resources.

The coordinating councils do not usually deal directly with youth. In some communities, particularly smaller ones, a particular guidance agency may perform the essential functions of the program, using the cooperating groups for supplementary services. The school agency may be such a direct arm of the council, or the school may deal with students while a separate organization performs the services for out-of-school persons. In larger cities, a more elaborate plan is necessary for successful work.

The coordinating council in any of these relationships to functioning agencies multiplies the available community resources. The points of contact are defined, and the readiness of resource people and organizations to serve is stimulated. When an urban community has established such a council, wide areas are affected. Guidance officers in neighboring communities are aided as greatly as the city units, since many young citizens are attracted by opportunities in the city.

The work in Cleveland, Ohio, is an example of community cooperation. Representatives of business, education, government and social agencies established the Occupational Planning Committee of Greater Cleveland in 1941. This group offers no direct services to youth but confines its activities to the coordination of the work of the member-organizations. They began with an analysis of the function of each of the member-organizations in terms of the total needs of the community. They have encouraged the development of guidance in the local schools and have taken other steps to improve this program in the community. Much attention has been given to the critical needs of the war years and the problems of the post-war period.

The Community Adult Counseling Service of Topeka, Kansas, is a representative of the centers which have been established through the Occupational Information and Guidance Service of the U. S. Office of Education. These organizations have been created in the light of the dislocations of veterans and war-workers during the emergency, and the purpose is to marshal the resources of communities to meet these needs. No federal funds were used, but the staff of the Occupational Information and Guidance Service were available for assistance. The Topeka Board of Education took an active part in the work, furnishing personnel from the school system and financing much of the program. Many organizations united to form the Community Advisory Committee. The staff consists of seven part-time people from the school system; the offices are in the High School building. The services of this unit are too new for evaluation, but such an agency is demonstrating the possibilities of the expansion of the school counseling services to include the whole community through the coordination of many activities and interests.

There are many similar organizations functioning in various parts of the country. The Ypsilanti Community Counseling Service is an example of an active unit established on a modest scale in a relatively small community, with the school as the central organization. The Omaha Youth Guidance Council has been active since 1935 in the coordination of the activities of many organizations concerned with the guidance of youth. Delaware County, New York, has adopted a program for counseling veterans through the cooperation of the sixteen school districts of this rural area.

There is no one pattern for these guidance centers, but they should be broadly based in the community. The organizations which promise longer life are those which bring to bear the range of community resources in the guidance of all groups which face the vocational problem. Community support may be rallied for such a program through the schools, although taxpayers tend to be conservative. The problem of finances will require community support either through contributions by interested citizens or though taxation.

Conclusion

The guidance agency uses many methods in tapping the resources of the community in its program and finds many individuals and organizations responsive to active work. When these resources are coordinated through a representative community council, they not only become more available to the agency but tend in turn to enrich and stimulate the original program.

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W. S. D.

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Achievement tests have been constructed in the fields of reading, English, vocabulary, foreign languages, mathematics, general science, social studies, physics, chemistry, botany, biology, zoology, psychology, geology, pre-flight aeronautics and others.

Further information may be obtained by writing to the Cooperative Test Service, 15 Amsterdam Avenue, New York 23, N. Y.

O. J. K.

CORRELATION

Variables. Dependence and Independence

Quantities which change or vary are called variables by mathematicians and statisticians. Thus, the height, weight and age of an individual vary or change with time; the circumference of a circle increases with its radius and the area of a circle increases with its radius. The variation in one variable may be associated with (but not necessarily caused by) the variation of other variables. The change in the height of a boy may be associated with his change in age. The variation in circumference or area of a circle will naturally be associated with variation of radius.

In each of these instances the value of one variable seems to depend in some way upon that of another. The weights of a group of boys will depend upon their ages. Their heights will also depend upon their ages. The circumferences and areas of a group of circles depend upon their radii. As might be expected, the variable which depends upon others is called the "dependent variable." Those upon which the dependent variable seem to depend are called the "independent variables." If weight is associated with height and age then weight is the dependent variable and height and age the independent variables. Circumference and area of a circle are each a dependent variable depending upon radius as independent variable.

Association between variables may be strong or it may not. The association between the circumference of a circle and its radius is a very strong one, while the association between the weights of boys and their heights is not so strong. In the sciences strong associations are expressed in formulae. $C = 2\pi r$ and $A = \pi r^2$ indicate the relation of circumference to radius and of area to radius in a circle. No such definite relation between weights and heights of boys can be written down because the degree of association of the variables is not strong enough to permit it. The object of correlation analysis in statistical procedure is to discover the existence of association between variables and measure its extent.

Simple Correlation. Linear and Curvilinear Correlation

When only two variables are associated the study of their relationship is pursued by using the methods of *simple* correlation. Simple methods cannot be used when a dependent variable is associated with two or more independent variables. In such cases multiple or partial correlation methods must be used, as discussed below.

The significance and interpretation of correlation procedures is made much clearer by using graphical representation. Thus, if the values of X and Y from table A be plotted on a sheet of plotting paper or graph paper it will be found that the points all lie along a straight line rising to the right. The fact that every one of the points lies upon the line is sufficient indication of the closest possible association between X and Y. The highest possible positive correlation exists between X and Y. In this instance, since the points lie along a line, the correlation is said to be linear and the relation between X and Y, namely, $Y = 2X + 3$ is called a linear relation, or linear equation.

A:	X	Y
	3	9
	4	11
	6	15
	7	17
	10	23

If the values of X and Y from table B be plotted it will be found that they can be connected best by using a continuous smooth curve. The correlation between X and Y is perfect in the sense that the relation can be represented by an equation, $Y = 2X^2$. This is not the equation of a straight line, but is the equation of a curve, a parabola. The correlation is, therefore, said to be curvilinear rather than linear. If the proper devices are used in calculating the correlation in these two illustrations the correlation will be equally high. However, a considerable error would be made if the correlation of variables in set B were calculated by methods appropriate to linear correlation. It is very important, therefore, before attempting to calculate correlation to ascertain whether the correlation is linear or curvilinear. When there is any doubt as to linearity the paired variables are plotted as points. Observation of the resulting plot will generally disclose whether the points tend to cluster about a straight line or a curve. In cases where it is difficult to discern there are numerical tests for linearity which may be used.

B:	X	Y
	3	18
	4	32
	6	72
	7	98
	10	200

A further possibility is represented by the paired variables of table C. Here it is observed that Y decreases as X increases, whereas, in tables A and B, Y increased with increasing X. The correlation calculated from table C would be found to be "inverse" or negative. The plotted points lie exactly along a straight line rising to the left, which indicates a perfect negative correlation. The equation relating Y to X is $Y = -2X + 11$ which is seen to be a linear relation with a negative coefficient for X.

C:

X	Y
1	9
2	7
3	5
4	3
5	1

Pearson Correlation Coefficient Coefficient of Determination

In the illustrations cited above the linear correlations of Y and X in table A and C were stated to be perfect or maximum values because the paired variates yielded plotted points lying exactly along a straight line and, therefore, capable of representation by exact formulae. In statistical studies it is not often that such strong or close association exists between the variables. While there is little doubt that the weight of a boy is related to his age the relationship is not fixed so fast as to permit the infallible prediction of a boy's weight from his age by means of a formula. Imagine the paired variables, weight and age, for a group of boys to be plotted, treating weight as the dependent variable corresponding to Y and age as the independent variable corresponding to X. It would be seen that the points tend to scatter about on the graph paper (hence, such a chart is called a "scatter diagram") but that it is possible to draw a straight line among the points such that the points along the line will represent average values of the plotted or observed values. This line might be called a "line of estimate." For a given assigned value of X or age it would be possible to find a point upon the line and, thence, a value of Y or weight. Thus a weight will have been estimated from an assigned age. If the equation of this line were found it would appropriately be called the "equation of estimate" for estimating a value of Y from an assigned value of X.

The best line to be drawn in such a situation may be determined by various mathematical methods or may even be drawn freehand, estimating its position among the plotted points by eye. The mathematical method for determining the best equation of the line is the method known as the Method of Least Squares and will be found described in any good standard textbook on statistical methods. However rigorous the determination of this line may be, it will still be true, generally, that all the points in a particular study will not lie along the line but will be scattered along both sides of the line. A quantity can be computed to measure this scattering about the line of estimates (also called the "regression line") just as the standard deviation can be computed and used to measure scatter about the arithmetic mean of an ordinary set of data. This computed measure is called the "standard error of estimate." The larger it is the greater the scatter of points about the regression line. If the points all lie on the line the standard error of estimate, most generally symbolized by S_y, is zero. If the scattering of the points about the regression line is great S_y will be large. S_y has the disadvantage that it is always in terms of the units of the Y-data. In the experiment with the weights and ages of boys S_y would be given in units of weight.

It is desired to have a measure of scatter about the regression line which will be a pure number. For this purpose the Pearson coefficient of correlation is most generally used. It is named for Karl Pearson who originated it. The formula for this coefficient is $r = \frac{\Sigma_{xy}}{N\sigma_x\sigma_y}$. The meaning of the various terms is best explained by the solution of a simple problem. For this purpose the data of set A above will be used:

X	Y	x	y	xy	x^2	y^2
3	9	−3	−6	18	9	36
4	11	−2	−4	8	4	16
6	15	0	0	0	0	0
7	17	1	2	2	1	4
10	23	4	8	32	16	64
—	—	—	—	—	—	—
30	75	0	0	60	30	120

$$X = 30/5 = 6.\ \bar{Y} = 75/5 = 15.$$

$$\sigma_x = \sqrt{\frac{\Sigma_x{}^2}{N}} = \sqrt{\frac{30}{5}} = \sqrt{6}$$

$$\sigma_y = \sqrt{\frac{\Sigma_y{}^2}{N}} = \frac{\overline{120}}{5} = \sqrt{24} = 2\sqrt{6}$$

$$r = \frac{\Sigma_{xy}}{N\sigma_x\sigma_y} = \frac{60}{5 \cdot \sqrt{6} . 2\sqrt{6}} = +1.$$

x is found by subtracting the mean value of the X's from each X and y is found similarly from the Y's ($x = X - \bar{X}$, $y = Y - \bar{Y}$).

It was mentioned above that the variables of table A are an example of closest possible association or perfect positive correlation.

From this calculation it is seen that perfect positive correlation is represented by a Pearson correlation coefficient $r = +1$. Perfect negative or inverse correlation is represented by $r = -1$, the value of r which would be found by applying the above method to the data of table C. The value $r = 0$ represents the situation in which the points of a scatter diagram have maximum scatter relative to the regression line and the correlation is said to be zero. The relation of r, the correlation coefficient, to S_y, the standard error of estimate is $r = \sqrt{-1 \frac{S_y^2}{\sigma_y^2}}$. While this is not a simple relationship, examination of it will disclose that, since σ_y is a constant, as S_y increases (indicating increasing scatter of points in the scatter diagram) r decreases. In fact, if there is no relationship between Y and X, or, to put it another way, if none of the variability of the Y set of data is explained by the variability of the X data then S_y will be of the same magnitude as σ_y. In this case $S_y/\sigma_y = 1$ and, from the above formula, $r = \sqrt{1 - \frac{S_y^2}{\sigma_y^2}} = 0$.

A measure of association which is becoming popular is the coefficient of determination. This is simply r^2, the square of the coefficient of correlation. This measure has the advantage that it represents a true percentage of the portion of one variable that is associated with the other.

Index of Correlation

As stated above, it is possible that a close association may exist between two variables when the relationship cannot be represented by means of a straight line. In such a case if a straight line were calculated as the regression line there would still be considerable scatter about the line. If the Pearson coefficient of correlation were to be used to measure degree of association in this instance a low value would be obtained for r which would be entirely misleading as a measure of relationship between the variables. If, however, a curve be drawn among the points on the scatter diagram the extent of scatter of the points with respect to the curve may be calculated and, from this, the correlation between the variables. As in the case of the linear relationship, the standard error of estimate, S_y, is useful for measuring scatter about the curve drawn among the points of the scatter diagram. This measure has the same relation to the assumed curve that the standard deviation of a set of data has to its mean. And, as in the case of σ it is stated in score units, generally those of the Y-data. It is desirable to have a measure of degree of association which will be a pure number. For curvilinear correlation the correlation index is used. It is computed from the formula $\varrho_{yx} = \sqrt{1 - \frac{S_y^2}{\sigma_y^2}}$. Referring to the data of table B above, it would be found that if linearity were assumed the correlation coefficient would be $r = .90$. Using the curve $Y = 2X^2$ it would be found that $S_y = 0$ and, therefore, $\varrho_{yx} = 1$. Thus ϱ_{yx} correctly indicates, in this instance, the high degree of relationship of Y to X while r does not. ϱ_{yx} is always a positive quantity between 0 (indicating no relationship) and 1 (indicating perfect correlation).

It should be noted that $\varrho_{yx} = 0$ may mean that if relationship does exist the curve assumed does not express it. It is important, therefore, to make a proper choice of this curve among the scattered points at the outset. The magnitude of ϱ_{yx} then measures the adequacy of the equation as expressing the true relation of Y to X. A value of ϱ_{yx} should never be given without giving the equation of the curve which was used in the computation of ϱ_{yx}. For a straight line, or in linear correlation, $\varrho_{yx} = r$. The value of r is, then a measure of the adequacy of some linear relation to represent the true relation between Y and X.

Biserial Correlation

Among the problems of correlation involving two variables there arise problems in which one of the variables is quantified or scaled and the other divided into two categories. Suppose it is desired to discover how success in teaching is related to intelligence. Teachers might be divided with respect to success into the two categories "successful" and "unsuccessful," and with respect to intelligence their intelligence quotients might be used. While no quantified measure of success is used in this instance, a formula for calculating the linear correlation may be developed on the assumption that success is an attribute with respect to which teachers form a normal distribution. That is, if a numerical scale were to be used to measure success of teaching the numbers of teachers attaining various degrees of success would form the ordinates of a normal curve. The whole area bounded by the curve and the X axis would then represent the group of teachers under study and this area would be divided into two parts (not equal, in general) by the classification "successful" and "unsuccessful." Hence, to develop a formula for biserial-r extensive use must be made of the theoretical properties of the normal distribution, particularly the theory relating to portions of area under the curve.

Tetrachoric Correlation

In the case of biserial correlation, one of the two variables was divided into two categories, the other being quantitative. Tetrachoric correlation refers to the case in which each variable is divided into two categories. Teachers under study could be classified as "successful" and "unsuccessful" and at the same time divided as to intelligence into the two categories "I.Q. above 115" and "I.Q. below 115." The formulae obtained are based upon the assumptions that both attributes are normally distributed, that the correlation is linear, that the two groups in each variable form a continuous whole and upon certain theoretical assumptions. The formulae are extremely laborious to use.

Multiple Correlation

When, from the value of one variable, it is possible to make an estimate of another variable the two variables are correlated. When the best estimate of a variable can be gotten by considering simultaneous values of two or more others the relation between the dependent variable and the independent variables involves multiple correlation. The weight of a child depends upon his height and his age, and if an estimate of weight in terms of height and age is desired, multiple correlation must be used. When a problem involves multiple correlation it is customary to represent the variables by such symbols as X_1, X_2, X_3, etc. This could also be done in the case of simple correlation. The equation of estimate would appear in the form $X_1 = a + bX_2$. The curve of best estimate in curvilinear correlation might appear in the form $X_2 = a + bX_1 + cX_1^2$ or in any other non-linear form involving the two variables X_1 (as dependent variable) and X_2 (as independent variable). In the case of multiple correlation the relation must involve at least three variables and might appear in the form $X_1 = a + b_2X_2 + b_3X_3$. Such an equation, being linear or in the first degree in X_2, X_3, represents a plane in three dimensional space and the correlation between X_1 and X_2, X_3 is called linear multiple correlation. If one or more of the independent variables appear in other than the first degree the surface in space represented by the equation would not be a plane but would be a curved surface. In such a case the correlation is said to be curvilinear multiple correlation.

For the coefficient of linear multiple correlation R is used with a suitable subscript. $R_{1.23}$ means the coefficient of multiple linear correlation between X_1 and X_2, X_3. In this case X_1 is the dependent, and X_2, X_3 the independent variables. $R_{2.13}$ would have a similar significance but with X_2 as the dependent and X_1, X_3 as the indepent variables. Similarly, $\varrho_{1.234}$ is used to represent the index of multiple correlation when the correlation is curvilinear, X_1 being the dependent variable and X_2, X_3, X_4 the independent variables. In an equation of the form $X_1 = a + b_2X_2 + b_3X_3$ or $X_1 = a + b_2X_2^2 + b_3X_3^2$ the b's are called regression coefficients. The calculation of R or ϱ for multiple correlation is made in terms of the regression coefficients. The calculation of these regression coefficients is a complicated process which will be found described in a reasonably advanced textbook of statistical method.

As in the case of simple correlation involving relationship between two variables there is frequently calculated a standard error of estimate for three or more variables. The symbol used for this standard error in simple correlation is $S_{\bar{y}}$. For multiple correlation a similar symbol such as $S_{1.23}$ is used. This might be interpreted as the standard error of estimating X_1 from X_2 and X_3. It is the standard deviation of the observed values of X_1 with respect to the calculated values of X_1 as given by the estimating equation. Since it is found by taking the difference between each observed X_1 and the corresponding estimated or calculated value of X_1, $S_{1.23}$ will be least when these differences are least. Thus, if the observed values of X_1 lie on the regression surface $X_1 = a + b_2X_2 + b_3X_3$ the value of $S_{1.23}$ is zero and the correlation between X_1 and X_2, X_3 is perfect.

Partial Correlation

Any measure of multiple correlation takes into account the collective and concurrent effect of the several independent variables upon the dependent variable. A measure of partial correlation is a measure of the effect of one of several independent variables upon the dependent variable, the other independent variables being held constant or their effect eliminated. If the coefficient or index or correlation between weight and height of boys of a certain age is calculated, this becomes a measure of partial correlation between weight and height, age being held constant. The statement is sometimes made that ordinary simple correlation is an example of partial correlation since only one independent variable is taken into account. This is not quite true. To ignore all independent variables but one is not the same thing as keeping the ignored variables constant.

The chemist and the physicist are able to isolate two variables at a time for study by control of experimental procedure. But in a very large proportion of correlation problems met in statistical work it is impossible to control the variables well enough to hold any of them constant or to arrange the collection of data so as to eliminate factors not wanted. Consequently, measures of partial correlation are not generally calculated by actually holding certain variables constant. Instead, the procedure is to measure first the variation of the dependent variable as affected concurrently by all the independent variables. Then the variation of the dependent variable is calculated as affected concurrently by all the independent variables which it is desired to eliminate. The second effect is combined with the first and yields a measure of variation of dependent variable with variation of the desired independent variable. The actual work might be carried out by using either standard errors of estimate or correlation coefficients. Thus, if $X_1 =$ weight of boys, $X_2 =$ height, and $X_3 =$ age, then $S_{1.23}$ is the symbol for the standard error of estimate of weight from height and age. $S_{1.2}$ is the standard error of estimate of weight from height. Then $r^2_{13.2} = 1 - \frac{S^2_{1.23}}{S^2_{1.2}}$ wherein $r_{13.2}$ is the correlation coefficient of weight to age, height being held constant. In the subscript of r the numbers to the left of the decimal point refer to the variables allowed to vary while those to the right refer to the variables held constant. In a more general case the coefficient of partial correlation might be obtained from such a formula as $r^2_{1.2345} = 1 - \frac{S^2_{1.2345}}{S^2_{1.245}}$ or $r^2_{13.245} = 1 - \frac{S^2_{1.2345}}{S^2_{1.345}}$. From the first of these the partial correlation of X_1 to X_2 is found, the effects of X_3, X_4 and X_5 being eliminated. From the second the partial correlation of X_1 to X_3 could be found, the effects of X_2, X_4 and X_5 being eliminated.

R. E. W.

COST OF PROFESSIONAL TRAINING. The cost of professional training is taken to mean the cost of all required education beyond the secondary level. The tendency has been to lengthen the period of special training as well as to require more years of college work as prequisite to entrance to the professional school. Therefore, the primary factor in the cost of professional training is the *number* of years of schooling beyond the high school.

The second factor is the annual cost of tuition, fees, room and board of the different schools. Schools of the same general standing may range from $300 to $1200 annually. Difference in cost is not necessarily a criterion of difference in quality of instruction.

The college study prerequisite to entrance may be taken at the school offering the professional training or may be taken elsewhere. When it is taken elsewhere, it is important to know what the prerequisites are and if the professional school accepts the credits of the initial school. Some junior colleges definitely offer preprofessional courses and some just as definitely do not. Teachers' colleges may offer courses in biology with such stress on nature study aspects that they are not acceptable as premedical courses. Likewise some courses in mathematics and physics may not be acceptable for full credit in an engineering school.

Public or Private Schools

Publicly supported schools are, in general, less expensive to attend than are privately supported institutions. Municipal colleges, frequently junior colleges offering preprofessional courses, are usually the least expensive to attend. Room, board, and part-time employment may be continued from the high school situation. However, when students live and work off the campus, they sacrifice much that is of value in the normal college experience.

State supported teachers' colleges usually offer an A.B. and a B.S. in fields other than teaching. They frequently offer preprofessional courses which are credited by the state university. These schools are generally small, less pretentious and less expensive than are the state universities.

Universities offering both the preprofessional and the professional training may give the better, advanced students the opportunity to earn part of their expenses by working as student and graduate assistants. This type of work gives the student valuable experience in the field of specialization and should be considered in figuring the cost of education.

Privately supported schools vary in expense from the very low to the very high. Some of the smaller, usually denominational schools, require all students to contribute a specified number of hours of labor each day. This reduces the money expenditure of the institution and tends to simplify the living conditions. These are probably the least expensive schools in the country. Other privately supported schools, junior colleges, liberal arts colleges, universities, and professional schools are very expensive. However, these schools frequently attempt to maintain a democratic student body by offering many scholarships and opportunities to earn while attending school.

Geographical Location

Northeastern schools are, in general, more expensive than are schools in other parts of the country.

Schools north of the Ohio River and east of the Mississippi River rank second in expense.

Schools in the middle west and far west rank third.

Schools in the southern states and in the mountain states are, in general, the least expensive.

There are a number of exceptions found in every section.

Urban or Non-urban Schools

In general, schools located in large cities are more expensive than are schools located in smaller towns. Living expenses are usually much higher with the other expenses in proportion. Professions requiring clinical study are usually located in large centers where a great variety of experiences are available. Medicine, dentistry, and social work are particular examples. This increases the cost of such training.

Professional Equipment

The medical and dental students acquire equipment from year to year while taking training. This adds to the expense of such training.

Estimated Expenses in Preprofessional and Professional Schools

Entrance to most professions requires a Bachelor of Science degree in the field. Advancement requires a Master's or Doctor's degree. These usually require four, five and seven years respectively. Other professions as medicine, dentistry and law require the advanced training and in some cases an internship before entering the profession.

The comparative costs of schools can best be obtained by consulting Good, C. V. *A Guide to Colleges, Universities, and Professional Schools in the United States,* American Council on Education. Washington, 1945. Such a survey is published by the American Council on Education about once in four years.

After one or more schools have been tentatively decided upon, their current catalogues should be carefully studied. There are various factors to be considered besides costs.

The number of years of training required for the various professions is given in the following table:

Profession	Years of Schooling			Range of Annual Cost in Professional School.
	Preprofessional	Professional	Internship	
Agriculture	0	4–7	0	\$300–\$1,000
Architecture	0	4–7	0	400– 1,100
Art	0	4–5	0	300– 1,100
Business	2	2–3	0	400– 1,200
Dentistry	2–4	4	0	700– 1,500
Engineering	0	4–5	0	400– 1,200
Forestry	0	4–5	0	400– 1,000
Home Economics	0	4	0	350– 1,000
Journalism	2	2–3	0	400– 1,000
Law	2–3	3	0	500– 1,300
Library	3–4	1	0	400– 1,000
Medicine	2–3	4	1	600– 1,400
Medical Technician	2–3	1–2	½	400– 1,000
Music	0	4–5	0	400– 1,000[1]
Nursing	0–2	3[2]	0	200– 500
Optometry	0–2	4	0	700– 1,400
Osteopathy	2	4	1	450– 1,100
Pharmacy	0	4	1–2	450– 1,200
Public Health	4	1–3	0	800– 1,200
Social Work	4	1–3	0	600– 1,000
Speech & Drama	0	4–7	0	600– 900
Teaching	0–2	4–7	0	350– 1,200
Theology	0	4–7	0	200– 1,000
Veterinary Medicine	1	4	0	350– 1,000

[1] Exclusive of private lessons.

[2] Twelve month years.

J. L. MacK.

COUNCIL OF GUIDANCE AND PERSONNEL ASSOCIATIONS, INC. The Council is made up of the following organizations: Alliance for Guidance of Rural Youth, American College Personnel Association, Association of College Unions, Eastern College Personnel Officers, Institute of Women's Professional Relations, International Association of Altrusa Clubs, Inc., National Association of Deans of Women, National Federation of Business and Professional Women's Clubs, Inc., National Vocational Guidance Association, Teachers College Personnel Association, Western Personnel Service.

Information regarding the Council and its activities may be obtained from Gladys F. Gove, Secretary, National Federation of Business and Professional Women's Clubs, 1819 Broadway, New York, New York.

O. J. K.

COUNSELORS, CERTIFICATION OF HIGH SCHOOL

History

The training of counselors was coincident with the appointment of counselors. In 1908 the Y.M.C.A. of Boston offered a course in connection with the development of the Vocation Bureau. In 1910 Superintendent Brooks of Boston requested the Vocation Bureau to train public school teachers for vocational counseling. In 1911 Harvard offered a course during its summer session. The first courses in regular session for college credit were offered by Columbia University and University of Missouri in 1913.[1]

By 1940 four states, Connecticut, Delaware, New York, and Pennsylvania required special certification for teachers engaged as counselors in public schools. California provided a certificate but did not require it.[2] By 1945 many cities and an increasing number of states required definite credentials for counseling in public schools.[3]

Training

All certifying agencies require a teacher's certificate which insures a background of general education and a four year college degree. Some agencies require a masters degree and some a masters degree in guidance. In general, eighteen to forty college hours in the field of guidance are required. These may be distributed in Principles of Guidance, Techniques of Guidance, Occupational Information, Research, Psychology and Testing, and Administration of Guidance Programs.[3]

Experience

One to five years of classroom experience is required. Where more than one year is required, counseling in a youth agency may usually be substituted for one year of classroom work. Most agencies require one year of non-teaching experience at paid work. Some require a continuous year and some accept part-time experience.[3]

U. S. Office of Education

The Occupational Information and Guidance Service of the Office of Education is in a position to assist state and other agencies in the establishment of criteria for certification to meet their individual needs. Differing state laws and peculiar local conditions make it impossible to establish general criteria but there are certain fundamental requirements which have very wide application. These general trends have been well summarized by the Occupational Information and Guidance Service:

CERTIFICATION OF COUNSELORS—PROPOSED

Counselor's Certificate

A. Provisional

1. Valid certification to teach in the secondary field.
2. Two years of successful teaching experience in the secondary field.
3. Work experience of not less than 50 weeks (cumulated) of regular paid employment in one or more wage-earning occupations other than teaching.
4. Completion of 12 semester hours at approved institutions in the following courses—starred courses required:

		Semester Hours
*a.	Principles and Practice of Guidance	2–3
*b.	Counseling Techniques	2–3
*c.	Occupational Inventory Techniques	2–3
*d.	Individual Inventory Techniques (including the place and use of tests)	2–3
e.	Organizing the School Administration and Staff to Carry On a Guidance Program	2–3
f.	Mental Hygiene	2–3

5. Provisional certificate is valid for four years of counseling service.

B. Permanent

1. Must meet all requirements for the provisional certificate.
2. A minimum of three years of successful counseling experience in public schools of secondary grade.
3. Completion at approved institutions of 18 semester hours additional to those offered for the provisional certificate. (This would normally complete the work for a Master's degree with a major in guidance.) These credits shall be earned in the courses below and in such additional courses, related to guidance work, as may be determined by the individual's needs and interests. The starred courses are required, regardless of credit.

	Semester Hours
*a. Tests and Measurements	2–3
*b. Seminar in Special Guidance Problems	3–6
*c. Counseling Practices (Internship)	3–6
*d. Seminar in Occupational Information, Job Analysis, Follow-up Studies, Occupational Surveys, and Placement Procedure with Practice in the Field	3–6
e. Organization and Administration of Guidance Programs	2–3
f. Organization of Guidance Programs for Adults	2–3
g. Statistical Interpretation	2–3
h. Social Case Work Methods	2–3
i. Industrial and Labor Relations	2–3
j. Vocational Education	2–3

References:

1. Brewer, J. M. *History of vocational guidance*. New York: Harper and Brothers, 1942.
2. Bailey, R. J. State certification of school counselors. *Occupations*, Nov., 1940, p. 94.
3. MacKay, J. L. Certification of high school counselors. *Occupations*, Apr., 1946. p. 393

J. L. MacK.

COUNSELORS, DUTIES AND JOB REQUIREMENTS OF. President Conant of Harvard University, himself a chemist, says in the *New York Times Magazine* for April 14, 1946: "It can be argued that really effective counseling is the keystone of the arch of a widespread educational system dedicated to the principle of equality of opportunity." It is generally conceded that school children and returning war veterans are in need of vocational counseling, that the number of counselors available for this task falls very far short of the need, that many people now doing vocational counseling are not adequately trained or qualified, and that much counseling is ineffective or even harmful. If the nation is to make maximum utilization of the talents of all individuals and is to make good its promise to prepare veterans for decent jobs, a large expansion of vocational guidance service of the highest quality is essential.

There are wide differences in the duties performed and in educational preparation of school counselors in different school systems. In general the job requires a teaching certificate, wide knowledge of education, personnel, and clinical psychology, skill in test interpretation, interviewing, knowledge of community and industry, some understanding of social science, considerable clinical insight, ability to supervise others, and to interest the community in the program. The school counselor usually teaches one or more classes, does some administrative work, counsels students, consults with teachers, works with parents, and helps maintain good community relationships. Vocational counselors in schools vary greatly in their background, training and experience. All have had teacher training but many lack adequate training in psychology. Vocational counselors confess to a need for additional training in clinical psychology, tests and measurements, and feel a lack of familiarity with industry and labor unions. Most school counselors drift into the work gradually or are selected for it by an administrator. A job analysis of the counselor's work is not identical with the task of counseling, since many tasks of the school counselor have little or nothing to do directly with the process of counseling.

In elementary schools, guidance is likely to include work with problem children. It should comprise gathering background material on each child to help teachers understand their pupils, as well as guidance for individual students who seem to be in need of it. In the absence of a school psychologist, the counselor may be called upon to carry out the testing program of the school, and to conduct a program of parent-teacher education.

While there is no uniformity in the work of individual counselors, the junior high school counselor, as observed by Barbara Wright in Minneapolis, teaches two classes or one class and a home room, has some extra duties such as discipline or administrative work, is responsible for orientation of entering pupils, and visits grade schools and parochial schools to explain the junior high school to pupils. In addition the counselor administers the testing program, interviews and makes programs for new pupils. He assigns students to sections according to ability, recommends remedial reading and other remedial classes and arranges programs for those needing special treatment. The counselor advises pupils considering transfer to vocational schools and assists in planning pupil programs for the first year of senior high school. He counsels pupils in matters of school and personal adjustment, and works closely with teachers on these problems. He also refers students for part time work and suggests jobs for those leaving school.

The counselor in the senior high school helps pupils to adjust to school life and gives individual guidance to those who need help with personal problems. In vocational counseling more narrowly considered, each pupil must be assisted with information about the characteristics and rewards of the occupational group of his choice, skills and qualifications required for such an occupation, information about his own abilities and interests as related to the wisdom of his choice, and further required schooling. Pupils are provided with information about training facilities and opportunities, including when possible a chance to try out in training courses or on the job. Personality and emotional adjustment as related to the job need to be considered in addition to aptitude and interest.

Cox, investigating the work of counselors in the secondary schools, found that they reported performing the following functions: working with parents, carrying out educational-vocational-emotional guidance of pupils, supervising or giving tests, interpreting test results, cooperating with law enforcing agencies, consulting with employers, disciplining of students, teaching, home room work, cooperating with community guidance agencies, placement and follow-up of pupils who have left school, and coordinating the guidance program of the school.

Among the personal characteristics considered desirable in helping the counselor carry out these multifarious duties are: fairness, wholesome philosophy, common sense, emotional stability, ability to get along with people, sympathetic understanding of youth, broad cultural interests, extensive knowledge, leadership, awareness of one's own limitations, understanding of classroom, of employment and of economic conditions. By way of training, the counselor should have a college degree with preparation in psychology, education, tests and measurements, biology, economics, sociology, community relations, group work, principles of guidance, counseling techniques, interviewing, vocational guidance, some experience in business, industry, and social work. Most counselors lack experience in business and industry and find their work less effective as a result. Industry is not always sympathetic to the work of the school counselor; employers sometimes complain that psychologists test misfits and say that they are fit for a job without the examiner knowing either the industry or the job. An acquaintance with labor unions is also important for the vocational counselor.

In college the counselor helps the student with adjustment to school life, with curricular and extra-curricular choices, with personal problems, with occupational opportunities, qualifications and requirements, and with an appraisal of abilities and handicaps. In the vocational guidance of students the college counselor makes use of personal history data, tests of intellectual capacity, aptitudes, abilities, interests, and personality. The personality pattern and profile of aptitudes must be evaluated in relation to the motivation of the student and considered in the light of job requirements and opportunities for employment.

Much counseling occurs outside the school. Some school systems, *e.g.* Baltimore, Maryland, have introduced counseling service for out-of-school youth. The United Automobile Workers of the C.I.O. has a counseling program which is largely informational and is concerned with appropriate referrals. Y.M.C.A., Y.W.C.A., and Girl Scouts are among other community groups interested in counseling. However, most out-of-school counseling is carried out by government agencies and their greatest present concern is with veterans. Veterans seek counseling either because they have never before developed interest in a career, or are trying for a better vocation, than the one they pursued before entering the service. The government is providing counseling through the Veterans Administration, the United States Employment Service, the Vocational Rehabilitation Service, and in colleges and schools.

In the clinics and centers planned by the Veterans Administration psychologists will be employed to use tests and interpret test results, to do the statistical work of the clinic or center, and to participate in research. They will also be called upon to advise in matters of vocational aptitude and placement. The Veterans Administration has set up the position of Vocational Advisor who "administers scholastic, achievement, mental ability, aptitude, trade, interest and personality tests, . . . scores such tests and prepares reports in profile-chart and other graphic forms. Evaluates and interprets findings from objective tests, collating them with other pertinent information in evaluating the claimant's experience, training and occupational potentialities. Assists in interviewing claimants, in collecting and tabulating vocational guidance data, and in making studies of occupational information and employment conditions." (Civil Service Announcement for Grade P-2, Vocational Advisor.)

At a higher grade, according to the Civil Service Announcement, the Vocational Advisor, working in the Vocation Rehabilitation and Education Division of the Veterans Administration, "interviews veterans . . . in order to determine occupational abilities and the effects of the disability, if any, in each case; assembles, analyses and records information concerning the abilities, education, vocational training, work history, home and family situation, and financial status of veterans; administers tests of general ability, personality, aptitudes, interests, and educational achievement, and interprets the results of such tests; studies occupational information including job analyses and factors affecting training requirements and employment conditions and, by making application of such information, counsels with veterans individually regarding the selection of an employment objective or of an educational and occupational goal; assists veterans in determining the kind and duration of vocational rehabilitation, education or training courses, including institutional or job training, which may be most suitable to restore employability or to attain their educational and occupational objectives."

The office of Vocational Rehabilitation provides similar counseling for the disabled and undertakes the clinical task of gaining emotional as well as intellectual acceptance of the vocational plan. In the United States Employment Service the counselor assists the applicant in discovering, analyzing and evaluating his vocational assets, provides information on job requirements and employment opportunities, helps to formulate a vocational plan and to put it into effect, puts the applicant in touch with community training facilities, helps uncover handicaps to employment and aids in overcoming them, and follows up with readiness to offer additional help if needed.

While occupational counseling has been conceived as a process of appraisal and advisement, especially in public schools, there is an increasing tendency toward a broader view of vocational counseling as a part of the clinical study of the whole individual. This emphasis is found more particularly in vocational rehabilitation work and in college counseling, and is being advocated for all guidance. To meet this trend vocational counselors will need training in clinical psychology. The clinical approach requires not only the measurement of individual abilities but the study and interrelation of physical, emotional, social and intellectual factors involved in the adjustment of the individual. Carl R. Rogers advocates nondirective counseling in place of the older methods of guidance. It is contended that steering the person on the basis of an appraisal does not take into account the person's basic motivation. To provide information is less important than to make it possible for the person in the counseling situation to obtain emotional release in relation to his difficulties and as a result to see himself more clearly and to accept his attitudes. The counseling situation must provide opportunity for achieving psychological growth.

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M. M.

COUNSELORS, SELECTION OF. Vocational counselors no less than other personnel workers will sooner or later be selected and trained on the basis of demonstrated aptitudes, and placed and perhaps compensated for demonstrated abilities. Criteria prevailing at present are too various for summary, but it is possible to observe frequent self-selection because of curiosity, delusion of insight, and inaptitude for anything else, with promotion for sycophancy, fortitude, and diplomacy.

The situation promises to improve rapidly from attention now being given it (note recency of references); space simply precludes a more discoursive preface to constructive suggestions of ways and means of testing and selecting vocational counselors.

1. If patterns of marital aptitude can be ascertained, as they have been (2), then significant and unique differences between "good" and "poor" vocational counselors should be discoverable; and until discovered, we shall anomalously possess only arm-chair reflection on the selection and training of selectors and trainers. Incidentally, it may prove profitable to look into the scope of personnel significance of marital aptitude patterns. Contrary to the marriage-or-career hypothesis, we suspect that among women, at least, marital aptitude accompanies counseling aptitude in organizations and occupations where tidy domestic and conforming behavior is advantageous.

2. The flight of psychiatrists, psychologists, and counselors of every variety from prediction tests of their descriptions (diagnoses), is scandalous in our opinion. Yet "insight evidenced by prediction of behavior is . . . measurable, useful, and worthy of analysis" (13). Interviews commonly terminate in recommendations that may be viewed as predictions. Counselors who fail systematically to seek to improve their counsel on the basis of need observed from follow-up are unscientific. A probation officer has recently set a salutary example (15). Predictions of adjustment can be required more frequently than at present, no matter how qualified, and they can be periodically reviewed for plausible evidence of a vocational counseling aptitude.

3. There are several personnel tests promising for use in the selection of counselors, although we know of no such use of them as yet, including Quentin W. File's "How Supervise?" (4) and the

"Administrative Judgment Test" and others of the U. S. Civil Service Commission (6), and those mentioned below.

4. Vocational counselors may have insight into one sex and not the other, with an obvious implication for scope of service. Such insight may be reliably measured by administering a valid masculine-feminine test under instructions to seem maximally one way and then again the other way (5). Failure so to measure sex insight during the last decade, particularly in selection and qualification of clinical psychologists and counselors of all kinds, is one of the curiosities in the development of applied psychology.

5. It would seem plausible to expect counselors of any sort to be able to some extent to predict the responses of those whom they advise. This requires emphatic testing, i.e., the taking of personality tests as if one were another, a procedure proving useful in diagnosing marital problems (12). Predicting modal responses or trait levels of groups interesting counselees would also seem a legitimate test of insight among candidates for counseling positions.

6. The technique of matching test results has several unplumbed possibilities. It has proved profitable in selection of employees who must work closely with their employer (12), as is often the case among vocational consultants in business and industry and frequently must be the case among their counselees. A quick and arithmetically simple method of so analyzing profiles has been developed by Frank M. Du Mas (3). In marital counseling (a currently needy vocational field), we prefer item-by-item rather than the rougher profile comparisons.

7. Vocational counselors can plausibly be expected to know the characteristic interests and preferences of those who have been successful in the group of occupations toward which they advise counselees. Such knowledge can be reliably measured by administering a valid vocational interest questionnaire under instructions to qualify highly for one occupation after another (10). The ability to predict scoring keys may indeed prove a more valid test of psychological insight than either institutional time service or examinations on textbooks in psychology.

8. Beyond knowledge of occupations and for discriminations among counselees, it would seem relevant to expect counselors to be able to evince knowledge and good judgment in regard to rating scale problems such as have been frequently and adequately discussed (Cf. 11).

9. Vocational counselors may evaluate counselees, and may themselves be evaluated, better by three-way or mutual rating than

by supervisory rating alone and the recommendations of former employers (13). Successful rating of college professors (8) suggests the rating of counselors by counselees. Successful mutual rating (9) should interest vocational counselors and their employing agencies. Top management rating of supervisory personnel alone is not a satisfactory criterion of validity (4).

10. Vocational counselors may know certain categories (occupations in the abstract) and yet not be able to appraise certain persons in those categories. It is possible although as yet laborious to ascertain relative competence among categories and among groups of persons (14), the epistemological elements—the knower, the categories of knowing, and the known—being measurable in similar terms and comparable units.

11. The procedure for validation of such ways and means of selecting vocational counselors as above suggested has been nicely laid out by Milton M. Mandell and Dorothy C. Adkins in a recent study of tests for selection of administrative personnel (6). Probability of success as a supervisor has been measured by F. H. Achard and Florence H. Clarke (1). Vocational counselors and personnel supervisors may plausibly be expected to have much in common.

12. The work sample type of test situation, as developed during the war by Henry A. Murray and Donald W. MacKinnon for "Assessment of OSS Personnel" (7) may prove the appropriate means of vocational counselor selection. Entailed is a thorough overhauling of current probationary "assessments" and the systematic focus of such criteria as above suggested. Psychiatrists, psychologists, and counselors will merit trust when they have set up sound performance tests for themselves.

H. C. S.

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COUNSELORS, TRAINING OF. The duties and attendant training of personnel workers in guidance programs in educational institutions have been markedly changed since 1940. The war years demanded greater competence of larger numbers of personnel workers than had ever been demanded previously. These changes have been reflected for the most part in the training of the general clinical counselor. Although it is difficult to discover agreement among the experts on all points pertaining to the training of personnel workers, certain general agreement is obvious, and is presented in Figures II and III below. For the purpose of convenience in discussion, personnel workers are arbitrarily divided into five categories: instructional, administrative, group, advisory, and clinical (counselors). The relationships of workers within these groupings are close enough in terms of tools and techniques, types of problems dealt with, and level of professional competence, to permit this adaptation from Williamson. Figure I illustrates the increasing level of professional competence demanded of personnel workers as we move through the hierarchy from instructional to clinical workers.

Instructional Personnel Workers

The instructional personnel worker is the classroom teacher. The major tools and techniques utilized by this group include the individualization of instruction, interpretation of school grades, use of various school records, aid to pupils in diagnosing and applying remedial measures to specific subject-matter deficiencies, and guidance and control of student behavior in following the rules and regulations of the particular educational institution. These functions are fairly comparable at all educational levels.

The professional training of the instructional personnel worker is chiefly preparation for teaching a specific body of knowledge. Progressive education has introduced many tools and techniques which supplement the work of the counselor, but which are used to a large extent to obtain motivation for learning. Although there are no state certifications which require formal graduate course work in guidance for instructional workers, certain such courses appear desirable. One is an introduction and orientation to guidance at the appropriate educational level, another is mental hygiene. Although these courses are also offered at the undergraduate level, it seems desirable that they be taken after the teacher has had teaching experience.

Administrative Personnel Workers

Administrative workers in guidance programs are not necessarily conversant with the details of guidance activities. Counselors, even chief counselors or directors of guidance, normally bear a staff relationship to school administrators. Because authority for all activities in a school system or college is vested in the chief administrator, the superintendent of schools, principal, and college dean or chancellor is the real director of guidance. These administrative workers provide the line relationships within which the guidance program is operated.

In large school systems which have an assistant superintendent, or director of guidance, this officer usually has had training and experience in the field of guidance. This is not always the case. The director of guidance who is a qualified counselor is discussed below under "counselor." Those administrators who are not in this category usually have little formal professional training in guidance at the graduate level. It is highly desirable that non-counselor administrative workers be exposed to graduate courses in the principles and philosophy of guidance. It is also desirable that they take an active part in the in-service guidance training program of their schools. The B.A. and M.A. are the most common academic degrees.

Group Personnel Workers

Classified as *group personnel workers* are homeroom advisers, class advisers, teachers of special subjects such as music or art, and

FIGURE I LEVELS OF COUNSELING COMPETENCE

Instructional and Administrative Workers (B.A.—M.A.)	Group Workers (B.A.—M.A.)	Advisory Workers (M.A.—Ph.D.)	Clinical Counselors (Ph.D.)
Classroom Teachers Superintendents Principals Supervisors	Homeroom Advisers Class Advisers Coaches Special Teachers	Teacher-Counselors Vocational Counselors Deans of Boys Deans of Girls	General Counselors Specialists in Educational-vocational or social-emotional problems School Psychologists
Tools and Techniques	*Tools and Techniques*	*Tools and Techniques*	*Tools and Techniques*
Individualization of instructional interpretation of school grades Clerical devices Specific subject-matter deficiency aids Disciplinary action	Individualized instruction Group orientation and activities. Development of social skills Direction of cooperation in group activities Analysis and treatment of simple personal problems	The interview Interpretation of population data, school grades, results of achievement tests, life histories, and medical recommendations Analysis and treatment of simple educational-vocational and social-emotional problems. Directive and non-directive counseling	Competent to use all needed tools and techniques of counseling in normal individual cases

Professional Training	*Professional Training*	*Professional Training*	*Professional Training*
Preparation for teaching Desirable: (1) Orientation to guidance. (2) Mental hygiene	Preparation for teaching Preparation for educational specialty Desirable: (1) Orientation to guidance (2) Mental hygiene (3) Group methods in guidance (4) Psychology of individual differences	Preparation for teaching In-service counselor training Desirable: (1) Orientation to guidance (2) Tools and techniques of guidance (3) Mental hygiene (4) Psychology of individual differences (5) Elementary and intermediate statistics (6) Group methods (7) Occupational information	Superior general training for work in educational institutions Completion of Ph.D. or reasonable equivalent in applied psychology (See Figures II and III)

the coaches of the various extra-curricular activities found in the majority of educational institutions. The professional training of these people is pointed toward creating learning situations outside of the formal curriculum in which the student may build foundations for making certain kinds of personal adjustments. As a general rule, group workers should confine themselves to the simpler types of educational-vocational and social-emotional problems. The work which they do often has therapeutic values for students with personal problems.

Group workers often combine the training requirements for general classroom teaching with further specialization in the activities which they direct. Graduate courses helpful to these individuals as guidance workers include an introduction to the principles and philosophy of guidance, mental hygiene, "group guidance" methods, and the psychology of individual differences. The M.A. degree or its reasonable equivalent is desirable because group workers usually need the professional training of the classroom teacher plus graduate work in their specialty.

Advisory Personnel Workers

In most educational institutions *advisory personnel workers* develop from the ranks of instructional and group workers. Many individuals in this category are preparing themselves for professional counseling duties. Included in the advisory category are teachers with definite responsibilities for counseling students with simple educational-vocational and social-emotional problems, vocational counselors who are concerned with placement and the dissemination of occupational information to individuals and groups, deans of boys and deans of girls who perform a wide variety of duties which usually include some counseling with students having social-emotional problems within the normal range. There is little uniformity in the professional training required for these positions. Vocational counselors have greater opportunity to obtain graduate courses pertinent to their work.

The strictly vocational counselor is beginning to disappear from the scene. Although the title "vocational counselor" is still applied to many counselors in secondary schools, it is less and less descriptive of the general counselors' major duties. Only in the largest school systems is it possible, or feasible, to make this division of labor. The weakness of the purely vocational counselor tends to be the one-sidedness of job analysis without equally great competence in man-analysis. This point is illustrated by a typical training program for the vocational counselor in the 1930–1940 decade reproduced below. Note is made of the number of courses which are undergraduate in character.

1. General courses: educational psychology, principles of teaching, educational measurements, sociology, economics.
2. Related courses: principles and problems of vocational education, industrial history, labor problems.
3. Guidance courses: principles and problems of vocational guidance, analysis of vocational activities, methods of imparting occupational information, psychological tests in guidance, counseling the individual, placement and follow-up, field work in guidance.

The purely vocational counselor has not tended to be a part of guidance programs at the college level, much of his work being done at the junior and senior high school levels. The Master's degree is a reasonable requirement for individuals in this category.

The title of *teacher-counselor* or *teacher-adviser* are the ones most commonly used in describing the school counselor. This terminology arises because of the advocacy of a school of thought which insists that the teacher is, and should be, *the* counselor. Teacher-counselors as a group are not professionally trained to deal with complex human problems. In many instances they do have greater competence in dealing with educational problems than do other faculty members. The *faculty-adviser* at the college level is the counterpart of the teacher-counselor in the secondary school.

The tools and techniques most frequently used by teacher-counselors include interpretation of school grades, population data about pupils, use of information about home and community environment, and interpretation of the results of tests of intelligence and academic achievement. Few of them are prepared to delve into other than superficial social-emotional problems and educational-vocational problems routine in nature. Most of their counseling, like that of the vocational counselor, is of the directive type. Too frequently they are submerged in clerical chores which impede their advancement toward greater clinical skill.

The formal, graduate training of teacher-counselors varies from that of states like New York where a provisional counselor certificate is required, to the large number of states where anyone can be designated a "counselor" by administrative *fiat*. Desirable graduate training includes the majority of the following courses: introduction to principles and philosophy of guidance and counseling, the tools and techniques of counseling, mental hygiene, the psychology of individual differences, elementary statistics, group methods, and occupational information. This formal course work should be supplemented by an in-service training program and an internship in another institution if possible. The Master's degree in applied psy-

FIGURE II

NON-PSYCHOLOGY GRADUATE COURSES FOR COUNSELORS IN TRAINING

COURSES	Kitson, H. D.	War Manpower Commission 1943	Paterson, D. G., Schneidler, G. G., Williamson, E. G.	Super, D. E.	New York State Counselor Certification	Guthrie-Moore Sub-Committee A.P.A.-A.A.A.P.	Estimated Semester Credit Hours
1. Introduction to counseling	x	x	—	x	x	—	3
2. Rehabilitation of the handicapped	x	x	—	—	—	—	3
3. Educational-vocational training opportunities.	—	x	x	—	—	—	3
4. Occupational information.	x	x	x	x	x	—	3
5. Labor market analysis. . . .	—	x	x	—	—	—	3
6. Labor problems.	x	x	x	x	x	—	3
7. Personnel administration in business and industry.	—	x	x	—	—	—	3
8. Community organization. .	x	x	x	x	—	—	3
9. How to interview.	x	—	—	x	—	—	2
10. Group guidance methods. .	x	—	—	x	x	—	2
11. Placement methods.	x	—	—	x	—	—	3
12. The curriculum and counseling	—	—	—	x	—	—	3
13. Social case work.	—	—	x	—	x	—	3
Total credits recommended. . .	22	24	21	22	14	—	37

Kitson, Harry D., "The training of a vocational counselor", *The Journal of Clinical Psychology*, Vol. I, No. 3, (July, 1945). *The Training of Vocational Counselors*, Bureau of Training, War Manpower Commission, Washington, D. C., 1943. Paterson, D. G., Schneidler, G. G., and Williamson, E. G., *Student Guidance Techniques*, New York, McGraw-Hill Book Co., 1938, pp. 300–305: Super, Donald E., *The Dynamics of Vocational Adjustment*, Harper and Brothers, 1942, pp. 273–274. *Certification Requirements for Counselors*, New York State Department of Education, Albany, New York. Graduate Internship Training. Report of Subcommittee, *Journal of Consulting Psychology*, Vol. IX, No. 5 (Sept.-Oct. 1945) pp. 243–266.

chology appears to be the minimum amount of graduate work on which to base sound professional standards.

The title *dean,* at the high school level, may indicate any conceivable pattern of duties. The keeping of attendance records, supervision of excuses, and the administration of discipline are often responsibilities of the high school dean. If the dean of boys or girls performs the administrative duties of an assistant principal, the position may be classified properly as belonging to the administrative category of personnel workers. Frequently it indicates a type of chief counselorship, often combined with some routine administrative functions. Training for such positions is dependent on the particular institution or school system in which the dean is employed. If deans at the high school level are considered as counselors, they usually approximate the competence and duties of the teacher-counselor. Formal graduate training in guidance should be the same as that for the teacher-counselor.

FIGURE III

GRADUATE COURSES IN PSYCHOLOGY FOR COUNSELORS IN TRAINING

COURSES	Kitson, H. D.	War Manpower Commission 1943	Paterson, D. G. Schneidler, G. G. Williamson, E. G.	Super, D. E.	New York State Counselor Certification	Guthrie-Moore Sub-Committee A.P.A.-A.A.A.P.	Estimated Semester Credit hours
1. Measurements and statistics	—	x	x	x	x	x(9)	6–9
2. Techniques of counseling..	x	x	—	x	x	x	6
3. Personality adjustments....	x	x	x	—	x	x	3
4. Clinical use of psychological tests	x	—	x	x	x	x(9)	6–9
5. Human growth and adjustment	—	—	—	x	—	x	3
6. Psychology of individual differences	—	—	—	x	—	x	3
7. Mental hygiene..........	—	—	—	x	x	x	3
8. Vocational psychology.....	—	—	x	—	—	x	3
9. Clinical internship........	x	x	x	—	—	x(30)	6–30
Total credits in psychology....	21	21	24	27	24	69	39–69
Total credits in non-psychology	22	24	21	22	14	—	37
Grand Totals............	43	45	45	49	38	69	76–106

See Sources for Figure II

Clinical Personnel Workers

Clinical personnel workers are those guidance workers in the schools and in the community who, through extensive training and long experience, are qualified to deal with the mental, physical, social-emotional, and educational-vocational personal problems to which individuals are subject. Examples of these guidance workers are physicians, school psychologists, dentists, nurses, psychiatrists, social workers, and clinical counselors. We are concerned here only with the training of professional counselors found in the better guidance programs. The terminology "vocational counselor" and "educational counselor" is purposely avoided. Counselors with proper training cannot be named for a specialty—their special interests tend to grow out of practice based on training which makes them relatively competent in diagnosing and helping people in many problem areas and at relatively complex levels of problem difficulty.

Counselor training has been radically changed in the past few years by currents of events. For example, the requirement by several states that teacher preparation shall extend over a five-year period forces the counselor-to-be to have the equivalent of the Master's degree before professional training as a counselor can be begun. This means that the counselor who desires adequate formal professional training must complete course work which, in quantity, is equivalent to that required for Ed.D. and Ph.D. candidates.

A large proportion of the best qualified counselors in America entered military service and were used in their professional capacity, or a closely related one, in such positions as classification specialists, training experts for military skills, aptitude, achievement, interest and personality test constructors, clinical psychologists, and numerous other kindred duties. The results of these experiences could not help but be reflected in the level of training demanded by competition when these men and women made use of their veterans' status to fill in skill and knowledge gaps apparent to them in their military practice. Less well or equally qualified counselors lacking veterans' preference can only compete for many desirable positions in the field by acquiring an unusual degree of competence.

The program of the Veterans Administration to cooperate with colleges and universities in the establishment of one-hundred or more clinical advisement centers forced standards of counselor preparation upward. The number of well qualified counselors was at least doubled as a result of this program. When the traditional type of counselor's work is done side by side with these more skilled individuals, he is often forced by the comparison to achieve a higher level of practice or drop from the field.

A final trend is the more careful selection of candidates by training institutions. The war created an acute awareness of the opportunities for counselors in education, business and industry, and government. When candidates outnumber training opportunities, the general trend is toward choosing only the best. As a profession approaches maturity, it tends to erect barriers which eliminate the weaker trainees. With this introduction, we now turn to discussion of the training program for counselors under the rubrics; personal qualifications, experiential backgrounds, and professional curriculum.

Personal Qualifications

One of the best statements of the personal qualifications for counselors is that prepared by the Subcommittee on Graduate Internship Training (D. Shakow, Ch., *et al*) appointed by the Committee on Graduate and Professional Training of the American Psychological Association and the American Association for Applied Psychology. It is reproduced here as a good summary of thinking by leaders in the counselor-training field.

"Although the need for a reasonably well-adjusted and attractive personality as a foundation upon which to build an adequately prepared clinical psychologist is generally recognized, it cannot sufficiently be emphasized since it is so frequently forgotten in practice. A more specific enumeration of the requirements in this respect would include the following:

"1. Superior intellectual ability and judgment.
"2. Demonstrated industry, originality and resourcefulness.
"3. Breadth of cultural background and versatility.
"4. Integrity, tact, self-control and discriminating sense of ethical values.
"5. Deep interest in psychology with special interest in clinical psychology; promise of being able to make a worthwhile contribution to its advancement.
"6. Demonstrated interest in persons as individuals and not merely as material for manipulation.
"7. Insight into one's own personality characteristics and sensitivity to the complexities of motivation.
"8. . . . (not pertinent)."

To the above is added the characteristic which has too often been the major one, appearance and behavior which is pleasing and attractive to others.

Experiential Backgrounds

There is no particular type of previous experience from which the best candidates for counselor training come. The most common factors are college graduation, and relatively wide experience in dealing with people. Because of state requirements, the great majority have had teaching experience, usually at the secondary school level. Business and industry, college teaching, school administration, and government service have all contributed good candidates.

Specific undergraduate concentrations for candidates tend to scatter widely but education, psychology, and sociology are probably the major contributors. The recent emphasis on counseling in training institutions for nurses has resulted in an increasing number of individuals from this field. If the candidate plans his undergraduate education for counseling in educational institutions, a combination of education and psychology probably affords the best base from which to enter graduate work.

The Professional Curriculum

There is no common pattern of graduate courses offered by universities to all individuals who wish to become counselors. Those who become competent counselors tend to major in psychology, education, or educational psychology, and complete a minor sequence in one of the three fields not chosen for the major. Some light is thrown on graduate curricular patterns by the compilations presented in Figures II and III. Because terminology in the original sources was not common to all, hours of credit were not uniformly stated, and a certain amount of reconciliation was necessary, the writer took some liberties with the statements of the quoted authorities.

The total number of hours recommended by all sources in these figures exceeded the requisite number of hours for the Master's degree. The greatest number of graduate credit hours (69) recommended was asked for by the A.P.A.-A.A.A.P. Subcommittee on Graduate Internship Training. This group advocates the Ph.D. or its equivalent. The smallest number of hours was recommended by the New York State Department of Education, 38, but this is recognized as the minimum amount of professional education for counseling, not an optimal or maximal program. In addition to the formal graduate course work, the New York State permanent counselor certification requires 1,200 hours of work in industry or business divided into several different kinds of occupational experience.

Kitson, Super, Paterson-Schneidler-Williamson, and the War Manpower Commission call their counselors "vocational" counselors. It is interesting to note in Figure II that, with the exception of Kitson and the War Manpower Commission, all recommendations call for more graduate course work in psychology than in subjects which are not generally considered as psychology courses.

A compilation of the graduate courses recommended by a majority of the authorities listed in Figures I and II yields the following training program beyond the Bachelor's degree.

Course	Number Recom-mending	Semester Credit Hours
1. Introduction to counseling and guidance	4	3
2. Occupational information	5	3
3. Labor problems	5	3
4. Community organization	4	3
5. Measurement and statistics	5	6–9
6. Techniques and tools of counseling....	5	6
7. Personality adjustments	5	3
8. Clinical use of psychological tests......	5	6–9
9. Internship	4	6–30
		39–69

An important omission in this curriculum is the non-directive approach to social-emotional problems. These techniques, known most widely in educational circles through the advocacy of Dr. Carl Rogers, are used by clinical counselors who deal primarily with problems of social-emotional adjustment. It is difficult to conceive of the well-trained counselor who has not had some training in their use and who does not know when and how to apply them. (Note should be made of the last column of Figure II.) The writer would add at least six graduate credit hours in non-directive counseling to those recommended above. The vocational counselors in our schools and colleges usually are deficient in their knowledge of this important area.

The composite curriculum above is beyond the present minimal demands of secondary schools for the professional preparation of their counselors. Rapidly rising pressures to obtain better qualified counselors should make this curriculum a base for further specialization in educational-vocational or social-emotional problems. It is obvious that a certificate or degree beyond the M.A. or M.S. is needed as a sign of minimal professional preparation for counseling.

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M. E. H.

CRIMINALS. The recognized purpose of prisons today is the rehabilitation of those who have broken the law. Rehabilitation is fundamentally an educative process. It has long been recognized that idleness is one of the frequent concomitants of crime, and that the offender is usually untrained in legitimate vocational skills. Hence, one of the inescapable aims of rehabilitation is to train the offender in some useful vocation. Here Vocational Guidance finds its place.

In a very restricted sense, Vocational Guidance has been groping in the back scenes of penal treatment for a long time. As long ago as the middle of the 16th century, when the houses of correction or workhouses appeared in England for the employment of vagrants, it is likely that some of the rudiments of Vocational Guidance may have entered the field of penology.

One of the basic tenets of penology has been that work should be provided for persons serving sentences. There have been times when this principle has been exploited and prison labor has been almost synonymous with slave labor. At other times the introduction of productive labor in the penal institutions has been hindered by free labor because of the undesirability of permitting the sale of prison made goods in the open market. The prevalent view is to provide work for all prisoners and to make it productive as far as possible without competing with free labor.

Some penal institutions have been interested in developing vocational training apart from production. This has been particularly true of reformatories, whose original purpose was the rehabilitation of the younger offenders. But, on the whole, work for prisoners is deemed desirable today because it reduces disciplinary problems, it reduces the cost of maintenance of the prisoners themselves, sometimes it provides a source of income for the state, and, incidentally, it may provide opportunities for vocational training.

In the picture just described Vocational Guidance is noticeable by its absence. As suggested earlier, the rudiments of Vocational Guidance may have been present. This is almost an inevitable inference. Where so many people are exposed to a considerable number of different occupations it is conceivable that some of them would receive some guidance in the choice of a vocation not previously followed. But the student looks in vain in the annals of penology for any Vocational Guidance program until very recently.

A Vocational Guidance program presupposes a general educational program, including vocational education and the availability of a reasonable number of occupations in which the inmates of a penal institution may be trained. Academic education of a sort, especially in the three R's, has been available in penal institutions for a long time, although its quality has not been of high grade. The program in some institutions, even today, does not aim beyond the removal of illiteracy. At the other extreme we find institutions with elaborate curricula at the college level.

Anyone familiar with the organization of prisons knows that certain occupations are always practiced for the purpose of keeping the prison going. A prison is not unlike a walled city, relatively autonomous from the rest of the community. For the State to hire all the necessary employees to perform all the services to maintain the institution would be very expensive. Much of the work must be done by the inmates themselves. A survey of the maintenance activities alone will reveal a considerable number of occupations. The running of such departments as the kitchen, the dining hall, the hospital, the inmates' sleeping quarters, the school, the power plant and the maintenance shops requires the use of men with different vocational skills: cooks, bakers, waiters, dish-washers, orderlies, laboratory technicians, dental technicians, nurses, operating room assistants, X-ray operators, janitors, window cleaners, teachers, firemen, oilers, watchmen, carpenters, painters, blacksmiths, tinsmiths, lathemen, plumbers, plumbers' helpers, steamfitters, sewing machine operators, cleaners and pressers, cobblers, stenographers, typists, clerks, etc. These are some of the occupations found in all prisons of any size. But many prisons go far beyond this to provide employment for all of their inmates. Where the prison is of the farm variety, the variety of occupations is materially increased. Walled prisons usually have special industries run on a production basis and producing articles used by other state institutions and agencies. Some of the more common industries are: clothes manufacturing, shoe manufacturing, furniture making, canning of fruit and vegetables, dairying, broom making, twine manufacturing, soap making, manufacturing of auto tags and road signs, quarrying, etc.

It is evident that, even under ordinary conditions, the prison situation offers adequate opportunity for vocational training in so far as availability of occupations is concerned. But until recently, very little effort has been made to coordinate and utilize these resources for the vocational training of the prisoners. There has been even less effort to coordinate the vocational resources of the institutions with whatever education program may have flourished in individual instances. Least of all has there been evidence of systematic attempts at Vocational Guidance.

The recognition of the principles of Vocational Guidance was practically forced upon the prisons by the new movement of classification of prisoners, which may be said to have entered the prisons in the late twenties of the present century. Although the principle of classification had been adopted by the American Prison Association at its first meeting in 1870, the proceedings of the Association show that the first committee on classification was organized at its Baltimore meeting in 1931. The introduction of classification in prison management called for the establishment of a classification committee composed of the heads of departments of the institution and including always such professional services as education, psychology, psychiatry, social case work and in some places sociology. In some institutions the classification committee is composed only of the so-called "experts" in behavior, namely, the psychiatrist, the psychologist and the sociologist. More frequently the administrative officer, the chaplain, the educational director, the shop foreman and the disciplinary officer are included.

It is generally conceded that the functions of the classification committee are as follows: (1) to study every inmate received in the institution, (2) to outline a program of treatment to fit the needs of the individual. The program must consider the following points: (a) health, (b) personality adjustment, (c) education, (d) vocation. If the pursuit of such a program is to be successful, one can scarcely avoid Vocational Guidance. Yet, in all the discussion that followed the introduction of classification in penal institutions, Vocational Guidance seldom is mentioned by name. But the application of its principles could scarcely be avoided.

A review of surveys of penal institutions made prior to 1945 will show that the majority of them recognize the training value of the occupations represented within their walls for maintenance purposes, and make some attempt to utilize these occupations for the training of their inmates through apprenticeship. In the institutions having classification committees, the assignment of inmates to the various occupations is done on the basis of relatively adequate case records, by such professionally trained persons as the educational director and the psychologist who are usually members of the classification committee. Both of these persons may be expected to have training in vocational counseling. Other institutions that do not have a classification committee, may have an educational director or school principal who may be in position to give some Vocational Guidance.

The proportion of institutions for adults having vocational education under well trained vocational instructors, and in coordination with academic education, is still very small. It is somewhat higher for the reformatories, but still far from the desired goal. The situation in the institutions for juvenile offenders is not much better.

It seems that the first attempt at an organized guidance program was initiated at the State Reformatory in Elmira, N. Y., in 1932. Since that time programs have been introduced, with varying degree of success, in New Jersey, Massachusetts, Connecticut, Wisconsin, Michigan, California and the Federal Institutions. Probably the most elaborate program has been developed in the state of New York, especially since 1936. The Industrial Counselor was introduced in the Federal Institutions in 1937.

From the meager literature available on the subject, it does not appear that Vocational Guidance, as understood in educational circles in this country, has yet found a place in the penal systems of other countries.

The advocates of a Vocational Guidance program in penal correctional institutions agree generally to the following principles:

1. In the institutional program it is necessary to avoid the exploitation of the labor of the inmates for the upkeep of the institution.
2. Every occupation should be exploited for its vocational training value and utilized for that purpose in the absence of vocational courses run independently of maintenance.
3. In institutions for juvenile delinquents provision should be made for a variety of try-out courses.
4. Assignment of an inmate to an occupation should be done by a classification committee after thorough study of the inmate's case history.
5. The classification committee—or the counselor—must be satisfied that each prospective trainee (a) possesses, or shows promise of acquiring, the physical status and the attitudes essential for his success in the chosen occupation, (b) that

he has the ability to acquire the necessary knowledge and skill, and (c) can be given the opportunity for intensive training in the vocation in a shop in the institution.

6. Finally, there must be assurance that it will be possible for the trainee to make the necessary connections on the outside to secure employment in the chosen occupation after release.

It is an accepted principle of modern penology that every part of the program developed in a penal or correctional institution must be oriented toward the event of release. Vocational Guidance should have this orientation. But its use does not cease with release. Under a modern penal system, the need for guidance is intensified after release with the added fact that now its problems arise and must be solved in a more realistic setting than was the case in the institution.

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G. I. G.

D

DEAF, AND HARD OF HEARING. Social life is based on casual conversation and group participation; consequently even a minor hearing loss has a subtle influence on earning, learning and living, in the last of which, loving is an important element.

As the degree of hearing loss increases, the difficulties the loss causes are increased, its influence becomes more apparent and the individual who bears the loss is more aware of the direct handicap as well as its repercussions upon himself, those about him and his environment. To those who have enjoyed music, its distortion, through faulty hearing, greatly mitigates what was once a great pleasure.

The Deaf

The deaf boy, or girl, or adult, may hear noise; the stomping foot, the clapping of hands, even the raised voice, when shouted directly in his ear. He may understand single words; key, go, come. He may be taught to respond to stereotyped sentences; Go to the door; Come here; Raise the window; Sit down, but what he hears is only a symbol of connected speech sounds we use in conversation. The speaker could have stomped upon the floor three times—the deaf individual would have learned to go to the door or raise the window in response, just as readily. When the deaf child enters school he does not even conceive of connected speech; he does not know its meaning. He must learn to speak, to read and to write, all by artificial means. He must even learn to control his breath by blowing a feather, or by some method learn to gauge the amount of air to expel in speaking. Learning these things is a miracle that only centuries of experimenting have made possible.

Education of the deaf is a highly specialized field, but every counselor of the handicapped should and can have a keen appreciation of the tremendous difficulties the deaf are overcoming. If he is called upon to counsel a youth or adult who finally has been diagnosed as deaf, he should not raise false hopes, waste energy and time in exposing him to objectives that involve the reception and interpretation of connected speech sounds, basing his hope upon sound amplification.

On the other hand, some children and adults have been raised and educated as deaf, who are not deaf, but hard of hearing. Their hearing mechanisms, including the cells of the cortex are capable of transmitting amplified speech sounds and benefiting by training in their interpretation. An otologist, working in cooperation with experienced educators of the deaf may be able to ascertain this fact and in such cases a hearing aid and training in its use may be justified. Every effort should be made to determine whether or not this is true, particularly with a young person. Adults, who have long considered themselves deaf, rarely respond. It is the attitude of the individual himself which must be the final determining factor, for building speech patterns is a matter of hearing thirty thousand and more speech sounds every day, as the hearing person has done from babyhood. If the individual is not willing to submit to the grueling practice, others' efforts are of little avail.

The Hard of Hearing

When regular audiometric tests are conducted by the schools, hard-of-hearing children are detected as a matter of routine. These children should continue to receive their education in public schools and be provided special facilities including front seats and proper lighting, group hearing equipment, lip reading instruction, special content coaching, depending upon the needs of the pupil. The parents should be advised, medical attention and follow-up assured. Vocational guidance should be provided and the student should be referred to the State Vocational Rehabilitation Service as he nears the completion of his high school work.

The discerning teacher or counselor may often detect hard-of-hearing students who may be listless and inattentive; show strain and irritability; be slow in responding; show undue fatigue at the end of the day; have difficulty in following oral directions; display anti-social traits, pugnacity or withdrawing; hold their heads in peculiar positions as though listening; have running ears, frequent colds, complain of head noises, ear-aches; make peculiar mistakes that have no apparent reason; have difficulty in differentiating small differences in phonetics; drop letters at the end and beginning of words or substitute incorrect sounds; have voice peculiarities; often ask for sentences to be repeated; hear better when looking directly at the teacher; unconsciously seek to be directly in front of the person when talking.

Attitude

The symptoms displayed by the hard of hearing are those of strain. They attempt to continue their usual activities, to keep up with their hearing associates, under difficulty. It is a state of conflict conducive to tension. Whereas the deaf boy or girl is sent to a special school, is educated among others of his kind and competes with them in an understanding environment, the hard-of-hearing child may not know the cause of his difficulties, realizing only his inexplicable defeats, and as a result may grow recalcitrant or apathetic. The deaf adult often seeks his companions among others who are deaf and is disposed to accept his situation for what it is, whereas the hard-of-hearing adult often remains betwixt and between.

Superficial similarities of attitude among the deaf and among the hard of hearing, which group-studies by means of questionnaires tend to detect, should not be over-emphasized. An individual with given hereditary constitutional and mental endowment, social and educational background and purpose, reacts to his problem in a purely characteristic way. There are many well adjusted deaf, and hard-of-hearing persons, but there are also shy, retiring deaf, and hard-of-hearing who live largely in unreality; over-active, emotional individuals; belligerent, suspicious, aggressive members; others who are primarily methodical, painstaking project workers, and still others who are selfish, shrewd, calculating. The range between the well adjusted deaf, or hard-of-hearing individual and the poorly adjusted, is as wide as the range between well adjusted and maladjusted within the general population and the intermediate variations are as great.

Rehabilitation Aids

An otologist may be able to alleviate or at least stop the progress of deafness. He can, definitely, stop the progress if he is permitted to examine the client sufficiently early in the course of disease. He can remove obstructions from the ear, reduce inflammation, advise regarding diet, remove infected tonsils, adenoids, operate on the mastoid bone and render other assistance best known to the medical profession itself, in addition to analyzing the hearing loss and advising regarding hearing aids. An otologist should be consulted in every instance as the first step in rehabilitation and his advice should be sought regarding suitable occupational environments so as to avoid heat, cold, noise, dampness, etc., when these conditions are known to be detrimental.

To young persons, of good health, who have a good nerve of hearing, but are victims of otosclerosis, the medical profession offers definite aid. The Fenestration Operation perfected by Dr. Julius K. Lempert of New York, and others consists of installing a new labyrinth window. Part of the Ossicular chain of bones is removed and replaced by a plastic skin flap rolled from the ear canal itself, and attached to the ear drum. Sound is then transmitted directly from the ear drum through the new channel to the labyrinth window. Sound impulses are then received by the nerve receptors as before the spongy growth of bone interfered with functioning of the ossicular bones.

When the hearing loss is diagnosed as perceptive deafness, that is, the nerve receptors themselves are affected, there is little to do. In some cases, however, these receptors are dormant from disuse rather than defunct. Some success has been realized in retraining the hearing mechanism by means of the Phipps Unit. This is a device that eliminates the usual diaphragm of sound amplifiers, but substitutes a tone arm attached to a vibrating armature mounted in rubber.

The tone arm is applied directly to the bones of the head. Great amplification of sound is thus transmitted to the cochlea without causing pain as would be the case if the same intensity were transmitted through the ear canal. The nerve receptors are thus stimulated and put to work again.

Lip-Reading

Lip-reading or speech reading as some prefer to call it because of the fact that all gestures, expressions of the face or other indications of meaning must be taken into account as well as the motions of the lips and positions of the tongue and teeth, is a necessary adjunct of the hearing-aid. This is particularly true of the severely hard of hearing who may not hear all the speech sounds even with a powerful aid.

The deaf are taught to read the lips. The oral method of communication is enforced to a greater extent in some schools than in others. Some deaf students are excellent lip-readers, others never grasp abstract meanings either in written or the spoken language. Their world is concrete and to such a student the intuitive element possessed by every good lip-reader is not among his equipment. The counselor who is faced with a deaf, young person or adult who has attended a school for the deaf and is not an accomplished lip-reader, should counsel him to continue the study of lip-reading, but not defer vocational training; for the possibility that he will show sufficient improvement to affect his vocational choice is remote.

There are several systems of lip-reading. The Muller-Walle method is based upon syllable drill because speech movements are based upon syllables, not words. The Nitchie system emphasizes the synthetic or psychological factor in grasping the meaning. "Lip-reading," says Nitchie, "is the art of understanding a speaker's thought by watching the movements of his mouth."

The Jena method stresses rhythm and speaking practice because speech is rhythmic. Relaxation and the play spirit are a part of the method.

The "Audio-Visual-Kinesthetic Method" provides for life situations to be brought into the class room by means of motion pictures. It is claimed that this method stimulates the pupils, makes repetition less burdensome to the teacher and has many advantages as a supplement to the usual class-room procedure.

Lip-reading appears to be based upon aptitude which enables some to become adept by any method, while others never become very successful. So far, there is no well standardized aptitude test for predicting success in the art and though there are many explanations of the differences in the ability to read lips, no definite conclusion has been reached. Positive correlations have been obtained with batteries of components such as rhythm, vocabulary, visual acuity and general intelligence, but the psychic, suggestive, synthetic or similar element has not been captured, though researches now in progress lend strong evidence to its existence.

Individual instruction in lip reading is desirable at as early a date as possible, following loss of hearing. Servicemen whose hearing is affected, are each receiving twenty-four, forty-five minute lessons of individual instruction followed by four weeks of intensive practice before leaving the service. They are fitted with earphones if they can use them, but lip reading instruction is required.

Speech and Voice Training

Speech and voice training should accompany training in lip reading. Great emphasis is placed upon speech and voice control in schools for the deaf, but a severely hard-of-hearing person may not even be aware that the quality of his voice is bad. He may not appreciate the need for voice training or be aware of its value, though he thunders at the world in raucous tones, or speaks in whispers or talks in monotone or flat throaty voice. Those who lose their hearing at early ages are most likely to develop voice defects.

Hearing-Aids

The single greatest aid that can be given the hard-of-hearing person is a modern, electric vacuum tube, portable hearing aid with moulded ear tip.

The ideal aid has been described as one that would amplify each tone exactly the right amount; would not destroy sounds by adding extra tones; would operate quietly, adding no noise in the process of operation; and would not magnify the voice around it; would be stable and durable, free from changes within itself, and unaffected by changing surroundings, weather and other external conditions.

These requirements are gradually being met by manufacturers of hearing aids. Individuals with hearing loss of 80 to 90 decibels and in some instances more, can secure powerful aids that at least are effective as supplements to lip-reading. When the loss is not greater than 70 decibels, present day instruments enable the individual to hear ordinary conversation.

One of the best ways of testing an instrument is to have a competent person repeat a standardized list of words that have been differentiated into consonant words and vowel words. Since the consonant words represent high frequencies and vowel words, low frequencies, the test may be scored for each. Intelligibility sentences are also available for a less standardized, but effective means of comparing the efficiency of two or more instruments. Such tests, when properly administered, are a more accurate measurement of the instrument's effectiveness for speech sounds than the pure tone test of an audiometer, although both methods may be tried.

Three military hospitals, in California, Oklahoma, and Pennsylvania, respectively, specializing on aurally handicapped servicemen, conduct articulation tests by means of a record, in a sound proof room, so that the test is always the same. The recorded voice gradually diminishes in intensity until the wearer of the hearing-aid can hear no more. This would seem to be an ideal arrangement.

To meet varying requirements, hearing-aid manufacturers are attempting to provide for independent adjustments on at least four major frequencies of the voice range. Thus, if the customer has unequal loss of hearing in different frequencies, the amount of amplification may be adjusted to attain a curve of "best fit." This procedure, probably, will become a common practice and still other and greater improvements are expected, together with reduction in size and price.

Organizations

The deaf or hard of hearing client should always be told of organizations that will be helpful to him in his every-day orientation. For both the deaf and the hard of hearing, the Volta Bureau of Washington, D. C. founded by Alexander Graham Bell in 1887, contains the largest library on deafness in the United States. It is headquarters for the American Association to promote the teaching of speech to the deaf and publishes the Volta Review, an illustrated monthly magazine of outstanding merit for educators of the deaf and for the hard of hearing. Its editors are indefatigable in their efforts to make of the magazine a vital force. The deaf or hard of hearing, or their parents, friends, or educators find a warm reception and willing and enlightened assistance through this Bureau. Information regarding other organizations for the aurally handicapped may be obtained here.

For the hard of hearing, the American Hearing Society with headquarters in Washington, D. C. and chapters throughout the nation, offers a varied program of education and self-help. This organization with a full time executive secretary and staff and a Board of Managers, including outstanding professional personnel, is an ever increasing influence in the prevention of deafness through its publication "Hearing News," national conferences, newspaper and radio publicity, particularly during Hearing Week (inaugurated by the Society) and through the personal efforts of its members.

Vocational Counseling

The job the deaf, or hard-of-hearing person can do depends upon many factors other than his hearing. Included are: general intelligence and its constituent pattern, both language and non-language; manual dexterity in its many forms; special talents; temperament in its basic form and conditioned expression; interests, both vocational and avocational; educational background; social and economic status, and work experience; the same factors that determine the job the hearing person can do. The matter of hearing loss then becomes an added factor and the degree to which it can be accommodated depends upon training and employment opportunities, the attitude of the aurally handicapped individual toward his own preparation, the extent to which the hearing handicap can be diminished, and the attitude of the specific employer who will employ the particular individual.

In one organization a handicap is insurmountable; in another it is merely something to be circumvented. Some employers will not employ a hard-of-hearing, or deaf person, claiming that their industrial insurance rates would be increased, or that there are no jobs in their organizations that do not require acute hearing. Specific studies have shown that the physically handicapped do not have more accidents than the non-physically handicapped and that if the hearing of persons already employed in the plants of these employers were tested, a significant proportion though doing satisfactory work would be found to have measurable hearing losses.

The attitude of some employers has changed greatly during World War II. Neither the deaf, nor hard of hearing are having any difficulty in securing employment at this writing, but it remains to be seen what will be the attitude of Employers when labor again becomes plentiful.

Vocational counseling of the deaf should begin early. Schools for the deaf have long provided training in crafts such as shoe repairing, printing, cooking, baking, dressmaking, horticulture, art, cabinet making, and general shop. The shops are generally well equipped and the training is good, but the deaf boy or girl may not accept the training as vocational. He may merely accept it as part of his school work and not attempt to follow the trade when he leaves the school.

Another factor is that schools do not have production material on which the students can learn to work at production speed, nor to learn job ethics. These factors are equally true in public school training; the difference is that a public school graduate, generally, may become apprenticed if he desires to continue in the trade; whereas the deaf boy or girl finds this difficult, in a tight labor market. Even in small shops, in occupations that would seem ideal for the deaf, the employer hesitates to undertake the training. He must go to the deaf boy and touch him to attract his attention; he must write out or spend time in making known his wants. Even then, misunderstanding arises easily. People turn and leave the deaf apparently without explanation. If they have made known their intentions he does not know it. Many hearing people consider the deaf as oddities and do not include them; or signal and point as though they were trained animals. As a result the deaf person is likely to act as he thinks others act. If he misunderstands, he may stay away from the job or take a few hours off without explanation. Having finished a piece of work he may simply wait until he is found and told what to do. These actions may not be peculiar to the deaf but when added to other difficulties, tend to aggravate the situation and end in its termination.

The deaf boy or girl, like others, is seeking to earn money. If he can earn it in a trade for which he has had some training, well and good, but if another opportunity to earn money appears which does not require training, he is likely to take it. That is what has been happening during the war.

The deaf in particular, therefore, need thorough vocational guidance. They need to be analyzed and directed toward a specific objective that is in accord with their potentialities and to have constant coaching until they have attained it. Federal Civil Service offers opportunities for the deaf that provide real careers for them. Aircraft companies in particular have compiled lists of jobs for which they will accept deaf applicants. The United States Employment Service are compiling job lists for the deaf. The Vocational Rehabilitation Services have many lists of jobs in which the deaf have become rehabilitated. The counselor may use these lists for suggestions.

Tests may be used in analyzing the deaf, and they should be tests that have had wide application, with well developed norms for the general public. For vocational purposes there is no point in comparing the deaf with other deaf only, since the objective is to determine how they will compare with those against whom they will compete vocationally. On a verbal test they compare unfavorably, for the deaf as a class, including those who become deaf at an early age, are found to be retarded. Even on non-language tests of general intelligence their median is below that of the hearing, but on tests of manual dexterity and mechanical ability, they are about equal. Those who succeed in graduating from schools for the deaf are a highly select group and will generally measure above the median of the general population on non-language tests of aptitude, such as the Minnesota Vocational Test for Clerical Workers and the Minnesota Paper Form Board. The California Capacity Questionnaire provides for comparison of verbal, with non-verbal intelligence, and is an excellent test for vocational guidance purposes. The Revised Beta may be used as a check test on the non-language intelligence score of the California test. A simple questionnaire such as the Bell Adjustment Inventory may be used advantageously to gain an insight to personal adjustment. Other temperament scales are applicable in the hands of a skilled administrator. A vocational interest questionnaire should be included in the battery of tests. Manual tests, such as the Minnesota Rate of Manipulation, Purdue Peg-Board and O'Connor Finger and Tweezer tests are well adapted to the deaf. Instructions may be interpreted in sign language for all of the tests, if necessary.

With the aid of tests such as those enumerated above, and skillful interviewing, the probable vocational level of the student can be determined early in his school career. The counselor should then continue to counsel and advise him and act as his coordinator until he has actually entered into the occupation for which he has been trained. Training outside of the school may be secured, if necessary, through the State Vocational Rehabilitation Services after the student has become of employable age, just as public school students who are physically handicapped are entitled to this benefit.

A few of the deaf are selected each year to attend college in Washington, D. C., but there is great need for an institution in each state devoted to education of the adult deaf. Such an institution should include voice and speech training and vocabulary building as well as avocational training under well trained instructors. Production requirements should be imposed and punctuality and job ethics emphasized.

A counselor called upon to counsel a deaf adult who is not skilled in the sign language should call upon some one who is, unless he is prepared to be exceedingy patient in writing his questions in simple, concrete language. If he employs an interpreter, he will find that he may talk at normal speed. The interpreter will keep pace with him, even wait for him. In view of the emphasis that is placed upon the interviewing technique in counseling the hearing, great precaution should be employed in interviewing the deaf if the client is to receive fair treatment.

The counselor of the hard-of-hearing adult, or boy, or, girl, who has made available to him the aids previously discussed in these pages, may find that from the standpoint of disability, the problem of vocational adjustment has been greatly mitigated, if not solved. There still remains the personal element common to all young persons and many adults who have not been able to decide upon an occupation.

The tests enumerated as applicable to the deaf are equally applicable to the hard of hearing. It is the check on non-language tests of general intelligence and special aptitude that is of particular importance. Ordinarily the hard-of-hearing person who had deficient hearing during school years will show slight retardation on a test involving language, but do significantly better on the non-language sections. Rarely, however, does he demonstrate the tremendous difference so common among the deaf.

Only the severely hard of hearing will experience much difficulty with the interview if the counselor is prepared to recognize the importance of seating the client with his back to the light so that the light falls on the counselor's face; to talk in a natural voice, and enunciate distinctly but not exaggerate, and to talk directly to the client, not out the window or to the desk. He should bear in mind that the hard-of-hearing client is under strain, the burden of proof that he can hear is upon him. He is anxious to demonstrate that he can hear and he is likely to let words pass if he does not hear them distinctly, hoping to catch the meaning later. The counselor should be sure that important words are understood.

The hard-of-hearing young person should be advised to continue in school so long as he demonstrates ability to benefit by the instruction. The handicapped person in particular needs all the general education he can assimilate as well as specific vocational skill or information. He should select his field of work on the basis of interest and aptitudes other than hearing, then choose a specific entering level job that does not place a premium on hearing and prepare for that job. Concomitantly with general academic subjects he may select drafting for example, in the field of engineering; accounting or office machines in business. He should be advised against law, or medicine unless he is to secure an M.D. Women, however, will find laboratory work excellent if they are otherwise adapted. Agriculture and Art are good fields for the hard of hearing, journalism dubious, but advertising production, good; common sense, and a knowledge of the requirements of occupations on hearing and the general opportunities in the occupations must dictate the choices.

Obtaining a job presents a problem, but not the greatest problem for the hard-of-hearing, or even the deaf. The real problem is that of advancement. A survey conducted by the United States Office of Education in 1935 revealed that the employers of 70 per cent of the aurally handicapped could not foresee advancement for their employees. Advancement generally involves supervision of others, a very difficult task for the deaf and one which the hard of hearing may not relish. For this reason the deaf and the severely hard of hearing are wise to emphasize production, in their preparation, whether it is in Art, Agriculture, Mechanics, Sewing, Writing, or Statistics; it is something he does, something he produces that is then evaluated; not what he hears or how he influences people, that is of primary importance.

Placement

Placement in employment is the ultimate end of all vocational guidance and training. To make vocational guidance most worth while, the counselor should be responsible for placing his client and for follow-up, to determine that the placement is successful. The State Vocational Rehabilitation Services place responsibility for all services for any given client under the supervision of one counselor and this has been a great factor in their success.

It is not necessary that the counselor actually make the placement if he may secure placement through another agency, but he should be responsible for the placement, confer with the cooperating agency and conduct his own personal follow-up. It is only through accepting this responsibility that the counselor maintains his contacts with the changing employment situation and is led to fully accept the challenge of effective counseling. Through placement activity the counselor increases his knowledge of the requirements of occupations and jobs, learns of the differing attitudes of employers, of the quirks of human nature that differentiate between success and failure; he learns to be humble and to correct his mistakes.

Summary

A hearing defect has a subtle influence upon personality, but the problems of the hard of hearing and the deaf are entirely different. A like degree of handicap imposed upon widely different temperaments, results in superficial similarity of reaction. The counselor must be familiar with many rehabilitation aids, but call upon specialists for their application. He must be skilled in the technique of interviewing these clients; know their vocational and training problems and how to evaluate their assets, objectively; have a vast knowledge of job requirements and the futures they offer. He must accept responsibility for placement and follow-up, in order to evaluate and improve his service.

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C. G. B.

DEAF CHILDREN, NEBRASKA TEST OF LEARNING APTITUDE FOR YOUNG. This individual type scale constructed by Marshall S. Hiskey, purports to measure the learning ability level of the young deaf or hard-of-hearing child. It is devised primarily for use with deaf or hard-of-hearing children from four to ten years of age. The scale is of the performance type but does not employ an approach through the use of form boards. It contains eleven types of items with a total of one hundred twenty-four individual items.

The standardizing group consisted of approximately five hundred deaf and hard-of-hearing children located in the state schools for the deaf in Nebraska, Iowa, Kansas, Missouri, Illinois, Indiana, and Ohio, as well as the members of the Lincoln, Nebraska Day School. Thus unlike many scales used with deaf children, this scale has been standardized entirely upon deaf and hard-of-hearing children.

The actual testing of deaf children presents problems which are unique. Since practically every impression of the test materials gained by the deaf child must be through the sense of sight, all instructions must be given through pantomime. For this reason items were devised to have an unusual intrinsic attractiveness. A sufficient variety of items have been used to sample adequately the abilities of individuals whose range of experiences has been seriously restricted. The directions for administering the scale are detailed and easily followed.[1]

The chief criteria for validity are: (1) selection—through critical analysis and adherence to item criteria, and (2) increase in percentage passing from one age level to the next.[2] It was impossible to determine validity through correlations with other test scores inasmuch as there was no existing test which would have been an acceptable criterion. Correlations were computed between the median score on the entire scale and the score on each group of items. These correlations ranged from .629 to .843.

The scale can be administered in approximately one hour. However, in order to make it more flexible and usable, two abbreviated scales have been devised which can be given in approximately thirty minutes. The correlations between the scores on these short forms and those on the original scale are .944 and .936.

Every effort has been made to make the test usable and yet have the mechanics as simple as possible. The record blank has been patterned after the one devised by Hildreth and Pintner. It is in reality a table of norms and the various scores are checked on the record blank. The median score is taken as the child's Learning Age.[2]

The test items not only are attractive to young deaf children but also have a high discriminative value. The scale is not difficult to administer or score and since it is weighted heavily with tasks similar to those which the deaf child must do in the early years of his educational career, it should be extremely valuable for gaining a better understanding of the abilities of such children.

This scale can be obtained from The Psychological Corporation, New York City, or from the author. The price for the complete set of materials including manual, record blanks, and carrying case is \$35; manual only, \$1.00.

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M. S. H.

DENTAL STUDENTS, COUNSELING PROSPECTIVE. The young man or woman who contemplates a career in dentistry must be prepared first of all to meet certain definite predental scholastic specifications. The Council on Dental Education of the American Dental Association has established minimum academic requirements for admission to an accredited dental school. These requirements presuppose but do not prescribe a high school education or the equivalent. The minimum predental course of two academic years in an accredited liberal arts college, prescribed by the Council, is based on the assumption that the usual college entrance requirements of high school graduation or the equivalent will be exacted by the liberal arts college. Several dental schools definitely prescribe high school graduation as preliminary to the two years of liberal arts study. The Council is content to leave the question of admission to the individual accredited liberal arts college.

The minimum requirement of the successful completion of two full academic years of work in an accredited college of liberal arts must include at least a year's credit in English, in biology, in physics, and in inorganic chemistry, and a half year's credit in organic chemistry. All courses in science must include both class and laboratory instruction. Formal credit in biology and physics, but not in English and chemistry, may be waived in the case of exceptional students with three years of college credit or in the case of those holding a bachelor's or other degree from an accredited college. Some dental schools require the specified biology and physics, as well as the chemistry, of all applicants regardless of the length and quality of the liberal arts record.

By an accredited liberal arts college is meant an institution approved by the Association of American Universities or by one of the following regional accrediting agencies:

Middle States Association of Colleges and Secondary Schools
New England Association of Colleges and Secondary Schools
North Central Association of Colleges and Secondary Schools
Northwest Association of Secondary and Higher Schools
Southern Association of Colleges and Secondary Schools

The admission of a dental student from a college not within the territory or jurisdiction af an accrediting body may be sanctioned by the Council in extraordinary or special cases after ample evidence has been furnished concerning the quality and character of the instruction in the institution in question. A limited number of students may also be admitted from unaccredited institutions provided the credits earned are acceptable toward its degree by the state university of the state in which the unaccredited colleges are located.

Statistics of enrollment in all the dental schools of the United States as of October 15, 1944 show that these quantitative requirements are being faithfully observed and that more than half the entering students offer credentials which go beyond the minimum requirement. At that time, 8,590 undergraduate students were enrolled in the 39 schools. Of this number, 4,184 or 48.7% offered two years of liberal arts credit for admission, 1,956 or 22.8% offered three years, 319 or 3.7% offered four years and 2,131 or 24.8% offered a bachelor's or other degree.

There is a certain sense of security in this faithful observance on a nation-wide scale of a predental requirement which, in effect, is set up and administered by the dental schools by mutual agreement and common consent. Of growing importance, however, and perhaps of even greater significance, is the quality of scholarship revealed by the credentials offered by applicants for admission to dental schools. As yet no common procedure has been worked out to determine on a national basis the level of scholarship in liberal arts studies attained by students who enter dental schools. About half of the schools require a so-called "C" average in the liberal arts record offered for admission. The second half aim in this direction but do not strictly maintain such a requirement. Some schools, finding the quantitative specifications satisfactory, do not compute the records in terms of grades or points.

It is, of course, well known that college marks have relative values and that C in one college may be inherently as indicative of successful accomplishment as B or even A in another college. It is for this reason that the Council on Dental Education has not attempted up to this time to establish a qualitative requirement in the credentials offered for admission to dental study. The Council does, however, believe profoundly in the value of exact and thorough scholarship in the predental studies. Even with the unreliability and divergence of college marks, there is perhaps enough certitude in them to warrant the belief that a universal minimum of C in all subjects or even of a C average would lift the common level.

It is commonly agreed that the best single evidence of the ability of the individual student to do effective work in a dental school is an excellent scholastic record in high school and college. Such information as is available indicates that the majority of the dental students tend to come from the middle or lower levels of scholarship in the liberal arts colleges. A grave responsibility rests upon the dental schools to recruit their full share of students from the upper levels of scholarship.

The universal observance of a common minimum quantitative requirement for the beginning of dental study is a distinct educational accomplishment. The very evident trend toward the discovery and observance of a common minimum qualitative requirement is a most promising sign of the times. Even greater concern than that now being exhibited about the quantitative and qualitative scholastic standards of admission to the study of dentistry is gradually emerging about the man behind the credentials.

Admissions officers are happily beginning searchingly to look behind the formal credit the student earns, both as to its extent and quality, to discover what sort of person he is. Can he stick to a difficult task and see it through? Does he have the ability to synchronize mind and hand to accomplish many of the nice problems which confront the successful dentist? Can he use his hands effectively? Does he possess the true spirit of scientific inquiry? Does he have the qualities of character, as well as of mind and hand and heart, which are essential to advancement in any profession? Does he have social instinct? Does he have an agreeable personality? Does he show signs of being able to get on with all sorts of people? Does he have a discriminating sense of moral and ethical values? Is he aware that the principal rewards of a professional career lie in satisfaction in worthy work well done and that the chances of amassing material fortune are slight indeed? Does he give evidence of appreciation of the importance of attention to personal appearance and hygiene? Is he physically fitted for the arduous task before him? Is he willing to work long and hard to make his way?

Toward the end of his long and notable career, President Eliot of Harvard said that the youth he observed in America were characterized by two great desires: (1) by the desire to know and (2) by the desire through knowing to serve mankind. The itch to know and the will to serve are the preeminent qualities the society of the future will demand of the dental profession.

These are questions no college credential fully answers. Nor do the aptitude and fitness tests which have yet been devised. The applicant may well ask himself these questions in the interest of his own future. The dental school must ask them in the interest of the common cause of better dental health for the American people. Dentistry's search today, as she enlists new entrants, is for the *man* behind the *credential.*

Realizing the importance of discovering the qualities beyond success in preliminary scholastic training which fit the individual for a career in dentistry, the Council on Dental Education and the American Association of Dental Schools are cooperating in the devising of mental and manual aptitude tests. It is expected that these tests will be given on an experimental basis over a period of perhaps five years independent of the fixed admission requirements. The correlation of the records in the tests with the work of individual students in the dental schools will be studied and effort will be made to discover what sources and types of scholastic preparation and what qualities of character, personality and fitness augur best for productive accomplishments in the field of dental practice.

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H. H. H.

DICTIONARIES, OCCUPATIONAL. As skilled workers, counselors need tools of high quality to function effectively. They must of necessity be acquainted with the production and use of these tools. The following article deals with such a tool—the Occupational Dictionaries.

Historical Development

Some of the early advocates and practitioners of job analysis were Charles R. Allen, Layton Hawkins and A. H. Edgerton. These men not only taught others how to do effective job analyses but also actually did job analyses in various industrial groups. However, until about 1934 very little was done in a comprehensive manner concerning exact meanings of the various job titles and the exact skills called for in each. Census records reported thousands of job titles but there was no agreement as to what these titles meant. Hence, the first steps called for the listing of jobs and then analyzing them at their sources by job analysts of the United States Employment Service. After this information was obtained there still remained the task of defining and classifying them. This compilation was completed in 1939 and released in 1940. It was called the *Dictionary of Occupational Titles* and was published in two separate volumes as Parts I and II. At that time 90 per cent of the employed American workers were covered by these two parts. For example, Part I—Definitions and Titles—contains job definitions for 17,452 separate jobs known by 29,744 job titles; while Part II—Titles and Codes—contains all the job titles listed in groups according to their occupational code numbers, of which there are 7,000. Supplements to these two parts contain an additional 4,201 definitions known by 6,619 separate job titles, so that the Dictionary now contains 21,653 definitions covering 36,653 job titles.

However, as the jobs were being defined and classified, it developed that fields of work for new or entry persons would have to be outlined in order to offer assistance to individuals without specific work experience or training. Individuals in this category were: young people about to enter the labor market; those whose only work experiences were after school or summer employment; older persons who needed job readjustment; housewives; victims of industrial accidents and others with physical handicaps. It was for these individuals that Part IV—Entry Occupational Classification—was developed. The revised edition which was completed in 1944 and released in 1945 is based on an analysis of 6,000 carefully selected occupations.

Distinction Between Part I and Part IV

The distinction between Part I and Part IV lies in the fact that Part I (and II) is intended for the classification of applicants who *are already fully qualified* to perform in specific occupations, while Part IV is intended for the classification of applicants for entry into kinds of work in which they *have not acquired fully qualifying* *knowledges or skills* through work experience or specific vocational training. Furthermore, Part IV describes fields of work *and not* specific occupations. But these fields of work may be regarded as groupings of specific occupations only to the extent that the tasks of these occupations are included in the definition for the field of work described for each entry classification.

Classification into Occupational Groups

The major occupational groups of Part I and their major subdivisions are:

- 0—Professional and managerial occupations
  - Professional occupations
  - Semiprofessional occupations
  - Managerial and official occupations
- 1—Clerical and sales occupations
  - Clerical and kindred occupations
  - Sales and kindred occupations
- 2—Service occupations
  - Domestic service occupations
  - Personal service occupations
  - Protective service occupations
  - Building service workers and porters
- 3—Agricultural, fishery, forestry, and kindred occupations
  - Agricultural, horticultural, and kindred occupations
  - Fishery occupations
  - Forestry (except logging) and hunting and trapping occupations
- 4 and 5—Skilled occupations
- 6 and 7—Semiskilled occupations
- 8 and 9—Unskilled occupations

These major groups and divisions are divided, in turn, into something over 550 smaller groups.

The major occupational groups of Part IV and their major subdivisions are:

- 0—X Professional, technical, and managerial work
  - Artistic work
  - Musical work
  - Literary work
  - Entertainment work
  - Public service work
  - Technical work
  - Managerial work

1—X Clerical and sales work
    Computing work
    Recording work
    General clerical work
    Public contact work
2—X Service work
    Cooking
    Child care
    Personal service work
3—X Agricultural, marine, and forestry work
    Farming
    Marine work
    Forestry work
4—X Mechanical work
    Machine trades
    Crafts
6— Manual work
    Observational work
    Manipulative work
    Elemental work

It is to be noted that the first digits 0, 1, 2, and 3 have about the same significance as in Parts I and II of the Dictionary. However, in Parts I and II, the first digits 4 and 5 signify *skilled occupations,* 6 and 7 *semiskilled occupations,* and 8 and 9 *unskilled occupations.* As noted previously in this article, since entry applicants have not acquired fully qualifying skills and knowledges, the major groups 4—X *mechanical work* and 6—X *manual work* are substituted for the *skilled, semiskilled,* and *unskilled occupations* as classified in Parts I and II. Entry codes are distinguished from codes in Parts I and II by an "X" in the second digit position.

Uses of the Dictionaries for Counselors and Teachers of Occupations

The chief use of the Dictionaries and their classification systems is based on the need of accurate information concerning jobs and their relationships in interviewing, counseling, or teaching of occupations. Specific applications of the Dictionaries to the purpose are:

1. To aid in making a local occupational survey.

   Duplications of job titles are avoided if jobs, discovered through local occupational surveys, are given titles used in Dictionaries. This procedure also helps to classify jobs according to occupational characteristics, to discover whether the job titles and classifications obtained are the same as those used in employment offices, and to obtain clear and concise definitions of the jobs which can be used as statements for "Nature of the work."

2. To learn to which industrial field the job belongs.

   Often a person prepares for a job but finds no vacancies. Therefore, it is helpful to know what other jobs call for similar skills and abilities. A person's chances of placement increase in proportion to the number of different jobs for which it is found that his qualifications and experience fit him. For example, a boy taking a course in "aircraft sheet-metal forming" might be registered as a *sheet-metal worker* (*aircraft*). However, his chances of placement are improved when it is known that he might also be considered for other jobs, such as *sheet-metal layout man, skin man, rib-frame builder,* and *wing-frame builder.*

3. To learn the variety of jobs to which the same job title is applied in the various industries.

   It may happen that the definition reveals that the same title is used to designate more than one job in different industries. For example, the title *patternmaker* is used in ten different industries to name ten different jobs—although different abilities, aptitudes, and skills are called for in each.

4. To Learn What Work is Performed in Any Given Job

   This may be merely informational insofar as learning the nature of the work performed, or it may be used to clear up misconceptions on the part of individuals as to what work is actually performed. Many times the same work is performed under a variety of titles used by workers and employers.

5. To acquaint individuals with the vast number of ways to earn a living.

   Too many individuals think solely in terms of nursing, cosmetology, stenography, bookkeeping, engineering, and aviation. Job games might be used as one method of acquainting pupils with the various job opportunities. These might take the form of completion, true-false, matching, or multiple-choice tests. Another approach might be to discover what jobs various courses are related to, directly or indirectly, as background or preparation.

6. To prepare pupils for field trips to industrial establishments.

   In order that pupils may get the most out of their visits to industry it is essential for them to know what to look for.

When pupils understand what workers do, then machinery will not appear to them as merely moving parts isolated from what the workmen are doing. The knowledge of what workmen do will permit pupils to ask more pertinent questions.

7. To file occupational materials.

To obtain the maximum use of occupational materials a system of filing should be set up. A system utilizing Part I has been developed by the State of New York and is used in many schools and counseling offices. Science Research Associates has a modified form which allows for considerable flexibility. Since occupational information is frequently published in terms of fields of work it is possible to use the code structures of Part IV.

8. To formulate a vocational plan of action.

The counselor and the counselee may use Part IV in formulating a vocational plan of action as a cooperative venture. An analysis sheet can be prepared on which aptitudes, interests, leisure time activities, training, experience, and other abilities can be listed. Most of these can be looked up in Sections II and III of Part IV. Entry occupational relationships can be written down. In many cases a definite occupational pattern will result. In others several may be suggested. The entry occupations can then be located in Section I which defines the field of work, shows the entry occupations which the individual is most likely to get, and the non-entry occupations which will require additional training and experience.

9. To teach classes in occupations.

Very early in his high school course the pupil is asked to decide on specializations to be made in his course of study. Such decisions should be based on many considerations—not the least of which should be reliable information about the kinds of work in each field of specialization. To use this information effectively he should be encouraged to think in terms of occupational patterns. The twenty-nine broad fields of Part IV can help in this organizational planning.

10. To convert military experience of demobilized members of the Armed Forces.

Part IV is useful in converting military experiences to civilian occupations. Sections of Part IV deal with specialized training received in the Army and Navy and convert them to entry occupational classifications.

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F. R. Z.

DRIVING, APTITUDE FOR VEHICLE. There are few occupations today which offer as wide a variety of occupational opportunities as does motor transportation. While there was some decrease in the number of registered vehicles during the war period, it is safe to assume, on the basis of 1942 figure, that there are still available literally millions of occupational opportunities in motor transportation and its immediately related fields. In 1942 there were approximately 5,000,000 registered trucks; more than 150,000 buses, of which 93,000 were school buses; and 30,000,000 passenger cars. Increased job opportunities should be particularly characteristic of the post-war period, both by reason of planned increases in the amount of motor transport and the fact that there remain more than 54,000 communities throughout the Nation which are not served by railroads and rely completely on motor vehicles.

According to an Army report there were over one million motor vehicles in use by the military services alone during the War, or ten times as many as were used in World War I. Many veterans who have had experience with motor transport in the armed services will doubtless be interested in positions with commercial fleets and other commercial users.

Characteristics Recommended for Success as Drivers

There is a wide difference between the requirements for operators of trucks and buses and those for passenger cars. In fact, many states have separate licenses for chauffeurs and for ordinary drivers. In general the following characteristics would be most valuable.

Physical Fitness.—General all-around physical condition: good vision, strength, hearing, no serious heart ailments. Other chronic diseases, such as diabetes, cancer, high or low blood pressure should also be considered. (Several of these are referred to in tests included below.) Loss of a hand, leg, or other part of the body often keeps a man from getting a job. Studies conducted at the Army and Navy hospitals, and by Joseph D. Elkow at New York University, show that minor orthopedic disabilities do not greatly handicap drivers of passenger cars. More serious impairments can be compensated for by auxiliary controls installed on vehicles. (See the Society of Automotive Engineers' report on, "Vehicle Controls for Disabled Veterans.")

Reliability and Honesty.—Both are most important, for the driver represents his company and in many cases is the only specific contact that the public has with the industry by which he is employed.

Emotional Stability, Good Attitudes.—Persons who are emotionally unstable, or who have serious mental diseases or bad attitudes, do not make good risks as drivers. (See Siebrecht Attitude Test below.)

Excessive Use of Alcoholic Liquors.—Expressly forbidden in I.C.C. regulations, state license laws, and state school bus codes.

Years of Driving Experience.—Successful driving experience on heavy vehicles is one of the most useful methods of predicting success. One of the best indications is the number of reportable accidents in 100,000 miles of driving.

Knowledge of Regulations and Good Practices.—A knowledge of state and I.C.C. regulations is essential. (Can be measured by tests indicated below.)

Recommended Psychophysical Tests

1. VISION

Acuity.—Using the Snellen test, not less than 20/40 in one eye, 20/100 in the other. (I.C.C. recommendations.) State requirements, if more exacting, must also be met. A more accurate measure of acuity is the Project-O-Chart (American Optical Co.) or the Keystone Telebinocular.

Field of Vision.—May be measured with the Brombach Perimeter. For rough estimations a perimeter may be constructed. Total field of vision recommended 140 degrees, but 100 degrees may be adequate. (See Brody below.)

Color Blindness.—Still considered important. It is doubtful whether or not lack of color vision contributes to many accidents.

Glare Vision.—Ability to withstand glare may be measured with the Feldman Adaptometer.

Depth Perception.—May be measured by the Keystone Telebinocular or the Rod Test.

2. REACTION TIME.—This test was found by Brody not especially valuable unless selective reaction was measured (variable responses to several lights). Average reaction for accident-prone group was .45 seconds, and for accident-free .42. Extremely slow reaction, .75 to 1.00 second, indicates coordination difficulties.
3. ATTITUDES.—These may be measured by the Siebrecht Attitude Scale or from actual observation of driving practices.
4. BLOOD PRESSURE.—Considered important by Brody. High accident-repeaters in his study were characterized by low systolic blood pressure 105 mm., as compared with low-accident group 129 mm.
5. HEARING.—Minor defects not important. States require person to hear a low voice at six feet.
6. COMPLETE PHYSICAL EXAMINATION.—Required by many employers.

Experimental work with many of these tests was done originally by Dr. Harry DeSilva at Harvard University and Dr. Alvah Lauer at Iowa State. Since then the American Automobile Association has constructed simple testing apparatus, as has the National Conservation Bureau and the Center for Safety Education, New York University.

Performance or Road Tests

Nearly all of the better state driver licensing examinations include a road test. In addition, many commercial fleets and school bus programs have some type of road test. The tests used by the Army are found in TM 21-300, "Driver Selection and Training." One of the best known performance tests can be secured from the American Automobile Association.

Information and Attitude Tests

The American Automotive Association also published a series of information tests on safe driving. The Abercrombie Driver Knowledge Test is also used extensively. The best known of the Army information tests is to be found in TM 21-300. The only attitude test that has been standardized is the Siebrecht test, described in his doctor's thesis, "Measuring Driver Attitudes." Fleet supervisors also depend to a certain extent on observation of the attitudes of drivers during the training period and during conferences. It is clear that drivers who show poor sportsmanship, impatience, failure to observe regulations, recklessness, or intemperance are apt not to be good insurance risks.

The Army Experience with Aptitude Tests

Both the Army and Navy had a big job to do in training drivers for mechanized warfare. Over a million vehicles were in use at various times. Millions of drivers had to be trained.

Certain services or corps of the Army provided superior selection and training. This was especially true of the motor truck companies of the Quartermaster's Corps, the Engineers, and the Transportation Corps. For example, hundreds of thousands of drivers at such installations as Camp Lee or Fort Francis Warren were given a complete series of psychophysical tests and several weeks of road training, followed by performance tests and convoy driving ratings. The testing and training program provided by such installations was markedly superior to that given by commercial fleets. However, this type of thorough training was not found in many of the other branches of the Service; all drivers of Army vehicles have not had this discipline.

Interstate Commerce Commission Requirements

Many of the aptitudes, tests, and characteristics listed above are similar to those required by the I.C.C. There are certain exceptions. I.C.C. recommendations call for drivers over 21 years of age. On the other hand certain state school bus codes call for a lower minimum. As a matter of fact, North Carolina, among other states, has had an unusually good safety and efficiency experience using drivers of high school age.

The complete I.C.C. requirements are to be found in the publication listed in the references. Certainly the safety record of I.C.C. vehicles has been admirable.

Drivers and Chauffeurs Licensed in the States

The state drivers license examination is essentially an aptitude test. In states where the examination is well developed, it includes tests of knowledge, driving practices and skills, vision, hearing, and the like. But there are many states where the examination is too weak to be of value.

Another weakness is that when a person has secured a license he is not examined periodically, as is the licensed airplane pilot. Thus the holding of a state driver's license does not indicate that a man is a good driver; it means that he *once* passed the examination. Commercial fleets or bus lines, therefore, require additional tests and ratings in order to do a successful job of driver selection.

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H. J. S.

DUNWOODY INSTITUTE ANALYSES OF INDUSTRIAL OCCUPATIONS. The Dunwoody Institute has analyzed the physical demands of a number of important occupations with a view to facilitating the placement of handicapped persons in suitable jobs. The results of these investigations have been summarized in the form of charts. Analyses have been made of the following occupational fields: air conditioning (11 jobs); automotive (21 jobs); baking, large shop (17 jobs); baking, small shop and laboratories (6 jobs); building construction, including architectural drafting, painting and decorating (11 jobs); electrical, central station, including power generation, power transmission (both overhead and underground), customer meter service and maintenance of equipment (59 jobs); electrical, manufacturing, including assembling equipment and servicing equipment (69 jobs); electrical, communications, including telephone installation and maintenance, and radio manufacture, installation and service (36 jobs); electrical, transportation, including generation, distribution, service and maintenance (23 jobs); electrical, construction and maintenance, including farm wiring, industrial wiring for power and light, large and small industrial equipment repair and maintenance (34 jobs); electrical, specialties, including business machines service, X-ray service, power tool service, refrigeration, appliance installation and repair, appliance motor repair (20 jobs); electrical, business (22 jobs); mechanical drafting (7 jobs); machine shop (17 jobs); printing (13 jobs); sheet metal (9 jobs); welding, arc (11 jobs); welding, gas (11 jobs). Charts and manuals may be purchased from the Dunwoody Institute, 818 Wayzata Blvd., Minneapolis 3, Minnesota.

O. J. K.

DWARFED. Vocational guidance for the dwarfed necessarily takes into consideration many factors in addition to the obvious one of stature. As among normal individuals, the areas of intelligence, aptitudes, personality, and environmental background vary greatly. However, unlike the usual field of vocational guidance, the problem is complicated by the fact that certain specific types of dwarfism are often accompanied by amentia. The cretins, a group of dwarfed individuals, are illustrative of this. The majority of these individuals fall in the intellectual range of idiocy through moronity; and by reason of the nature of their intellectual handicap, many of them can derive little benefit from vocational analysis and guidance.

The relatively small size of the group commonly classified as dwarfs, coupled with the fact that advances in medical science are rapidly overcoming physiological deficiencies in certain children which might result in dwarfism, has resulted in relatively little specific work being carried out in the field of vocational guidance of these individuals. In general the techniques used in the vocational guidance of dwarfs closely resemble those used in the guidance and placement of the normal group with certain exceptions. When covering the field of dwarf types, the limitations imposed upon the individuals by reason of their small size are constantly considered. As a result of this, those occupations placing a premium upon normal height are automatically eliminated. In addition the grotesque bodily characteristics of some specific types of dwarfism undoubtedly act as limiting factors in the vocational placement of certain individuals. In contrast, however, other occupations are opened by reason of the individual's diminutive size and appearance. Various types of mechanized equipment which eliminate the size factor or make it of relatively little importance are serving to constantly open new occupations to individuals of dwarfed stature. This trend may be expected to continue in the future.

The counseling of dwarfed individuals and the determination of the vocational aptitude within the limited available occupational areas is based primarily upon standard techniques. This includes the usual techniques of determining the environmental background, the educational level, and the occupational skill of the individual through the use of questionnaires or by various counseling techniques. As in normal vocational analysis and guidance, the intellectual level as well as the specific aptitudes, interests, personality characteristics and traits, and physical characteristics of height, strength, weight, and overall appearance are ascertained in each individual case. For this purpose the use of intelligence tests, aptitude tests, interest tests, and personality tests follows the standard procedure for guidance of normal individuals with special modifications. In many instances considerable counseling will have to be accomplished before the individual will recognize and accept the limitations placed upon his level of aspiration by the physical factors imposed upon him. The particular method and approach to the counseling problem depends upon the training and the skill of the counselor. It usually includes the utilization of both directive and non-directive procedures, dependent upon the specific conditions surrounding the individual case.

The usual testing techniques when utilized in the guidance of the dwarfed require modifications to be made in the interpretation prior to giving actual guidance to the individual. Since many dwarfs show the usual range of normal profiles as a result of testing, it is necessary to analyze closely the various vocational areas which the testing profiles indicate the individual is qualified to enter. These areas must be analyzed to determine whether the physical limitations of bodily stature and appearance will exclude the individual from normal success within the indicated field. It is common practice not to give vocational guidance based upon the individual's suitability for a total vocational area but rather to determine the possibility of his handling specific jobs within the indicated field. As a result of the testing profiles, it is necessary to select for consideration for occupational placement specific vocations suitable for the physical limitations of the individual. Such factors as height, length of trunk, length of leg, and length of reach eliminate certain occupations for dwarfed individuals unless specialized equipment is available. Where specific feeblemindedness is an accompaniment of the physical abnormality, there are definite limitations to the range of occupations dependent upon the degree of feeblemindedness present.

In certain occupations the actual physical factors which prevent the individual from being successful in vocations requiring a normal height have proved to be a definite asset. In the field of entertainment, particularly vaudeville and circuses, the lack of height acts as a novelty, hence affording placement for such individuals, particularly those with aptitude for showmanship. These include midgets, individuals capable of feats of strength, acrobats, and sleight of hand artists. Sometimes such individuals are teamed with giants and individuals of normal size to afford contrast effects. The motion picture branch of the entertainment field at times affords opportunity for placement as an extra.

In occupations in which light weight and small stature are of importance, such as jockeys, individuals falling within certain ranges of size and weight, toward the upper limits of the group commonly classified as dwarfs, are often successful providing they have the required dexterity and physical strength.

Within the industrial field dwarfed individuals have mainly found placement in those occupations in which their physical size serves as an asset, such as in riveting and bucking in shipbuilding and aircraft. In these industries they are employed due to their ability to gain easy entrance to certain enclosures, such as between decks and inside wings, not accessible to normal sized individuals.

In addition, in the industrial field dwarfs have also held numerous occupations commonly filled by normal sized workers such as aircraft electrical assemblers and electrical installers, sheet metal fabricators, aircraft machinists, aircraft mechanics, and aircraft cloth fabric workers. They have also found placement as precision inspectors, bench drill press operators, power operators, and in numerous other industrial placements in which size is a relatively unimportant factor.

Dwarfed individuals occasionally maintain their own establishments including such businesses as cigar stands, newspaper stands, small grocery stores, and similar private enterprises. Certain types of truck farming, flower cultivation, poultry and rabbit raising, and other agricultural activities are suitable.

In the consideration of placement of a dwarfed individual in any of the large fields—theatrical, industrial, agricultural, or private enterprise—the classification dwarfed covers individuals ranging from extremely small stature to almost normal height. Individuals who fall just under the normal height classification can in many cases, providing the intellectual aptitude, interest, and personality factors are suitable, find placement in the vocations of normal individuals; whereas those individuals who are extremely small in stature may be more suitably placed in occupations in which their small size acts as an asset. The range between these two extremes calls for careful consideration on the part of the counselor to determine the factors making for success or failure in the occupation when placing the under-sized individual.

Reference:

1. *Operations manual for placement of the physically handicapped, 3rd Edition.* U. S. Civil Service Commission. Washington: U. S. Government Printing Office, 1944.

H. W. C.

E

EARNINGS IN THE MAJOR OCCUPATIONS. Estimates of the earnings in selected occupations are given in Table I. The first column of figures in the table gives the average earnings based upon the period 1920–1936. These earnings vary from an average of $4,850 for the doctors down to $580 for the farmers. The next column in the table gives estimates of earnings for the same occupations for the year 1945. The average earnings of all doctors are estimated to fall some place between $7,600 and $8,600. If a single figure had to be given it would be better to take the figure halfway between these two or $8,100. The average earnings of all engineers is estimated to have been between $7,100 and $8,100. The best single figure again would probably be $7,600.

TABLE I

Estimates of Earnings in Various Occupations

OCCUPATION	AVERAGE EARNINGS in dollars per year 1920–1936	ESTIMATED AVERAGE EARNINGS in dollars 1945
Doctors	$4,850	$7,600 – $8,600[1]
Engineers	4,410	7,100 – 8,100
Lawyers	4,730	6,600 – 7,800
Architects	3,820	5,700 – 6,900
Skilled Workers	1,430	2,500 – 3,100
Farmers	580	1,700 – 2,300
School Teachers	1,350	1,700 – 1,900
Unskilled Workers	795	1,600 – 1,900

The Average Income in the United States

The basic figure from which all other estimates are judged is the average income of all the gainfully employed people in the country. The crude way to make this estimate is to divide the total income of all the people by the number of gainfully employed workers. The income of the country in the middle 1940's has been running around $160,000,000,000. If the $ 160,000,000,000 is divided by the approximately 58,000,000 gainfully employed workers, we have an average of approximately $2,600. If the unearned income is subtracted from the total figure, we have an average earned income of something approximating $2,400 per year.

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[1] The true figure based upon all the cases would probably be between $7,600 and $8,600.

The Effect of the War on Earnings

Nineteen hundred and forty-one might be considered our last peace-time year. The total national income in that year was approximately $92,000,000,000. The gainfully employed workers were approximately 53,000,000. This would make an average income of approximately $1,750 or an earned income of approximately $1,600. The average income in 1941 was approximately $1,600, in 1945 it was approximately $2,400. This would indicate an increase of approximately 50 per cent in income. Unfortunately prices had risen during the same period. There is no agreement as to how much they had risen. The official figures would indicate a rise of approximately 25 per cent. This undoubtedly does not report the full amount of the rise, however, because it takes no account of black market prices, of the disappearance of low priced goods and the deterioration of quality. Students of the problem would add any place from 5 per cent to 15 per cent rise because of these items. Certainly it would be reasonable to assume that prices had gone up 30 per cent. This would indicate a rise in per capita income, adjusted for the cost of living, of something of the order of 20 per cent. This may not be an entirely unreasonable estimate.

One thing is perfectly clear, that the war brought about profound changes in the relative condition of various classes. When the war started the average white collar worker and the average industrial worker were receiving approximately the same wage, about $1,600. The average industrial worker's wage went up to over $2,600 and the average white collar worker's increased only to $1,800. This means that with the wage rates prevailing in 1945 and 1946, the income of the average white collar worker had declined drastically in relation to the income of the average industrial worker.

The average white collar worker had been getting as much as the average industrial worker in 1940 and in 1946 he was getting only two-thirds as much. Beyond this it is perfectly clear that the absolute status of the white collar worker had deteriorated also. His income had increased an average of perhaps 15 per cent or 20 per cent and the cost of living had certainly risen 25 or 30 per cent. He was, even on an absolute basis, probably 10 per cent worse off than he had been five years before. In other words his standard of living had deteriorated.

It is very difficult to make any estimate as to what will happen to these relationships in the years ahead. Somewhat the same situation developed during the first war and certain adjustments were finally made within the next ten or fifteen years. Normally that would be what would be expected; on the other hand, unions are much more powerful in the case of the industrial workers and if periods of high prosperity hold, they may very well advance their relative position even further. On the other hand, if and when depression begins, white collar workers who hold their positions will fare relatively much better than the industrial worker.

Wage Earnings in Manufacturing Industries

The average hourly earnings of wage earners in manufacturing industries was $1.04 in 1944. These workers worked an average of approximately 45 hours a week. This meant that the average earnings in manufacturing of the wage earners was something between $45 and $50 a week at the peak of the war prosperity. This would indicate an average annual wage of approximately $2,500 a year. These wage earners in manufacturing cover, of course, both skilled and unskilled workers. The skilled labor group was making something between $2,800 and $3,000 per year and unskilled labor between $1500 and $1800 per year.

Earnings in Farming

The gross return of the farmer at the peak of the war-time prosperity was approximately $22,000,000,000. The net return of the farmer was perhaps something on the order of $12,000,000,000. As there were approximately 6,000,000 farmers this gives an average return of approximately $2000 per year. This figure has shown a startling rise through the 1930's and up to the middle 1940's. At one time in the 1930's income had dropped as low as $400 a year. The average for the entire period 1920–36 was about $600.

This farm income is the payment for both farm labor and farm management. If we assume that the farmer was a skilled worker and credit him with the same wages as a skilled worker he was still not making a normal wage, although the farmer was getting so much more than he had ever received before that he considered his condition very satisfactory. The farmer, however, clearly was not being paid anything for the business of running his farm. He was earning slightly less than the average of all the wage earners in manufacturing industries. It is true that he was making probably twice the earnings of farm labor, however. The average income of farm labor was running around $1,200 per year. The following table shows the income of farmers.

TABLE II

NET INCOME OF PERSONS ON FARMS FROM FARMING

Year	*Income*
1929	$ 6,740,000,000
1930	5,100,000,000
1931	3,400,000,000
1932	2,200,000,000
1933	2,900,000,000
1934	3,500,000,000
1935	5,000,000,000
1936	5,300,000,000
1937	6,000,000,000
1938	5,000,000,000
1939	5,200,000,000
1940	5,400,000,000
1941	7,500,000,000
1942	11,200,000,000
1943	13,700,000,000
1944	13,800,000,000
1945	13,900,000,000

Salaries of Professional People

Some professional workers suffered very sharply because of the war situation. In general these were the professional workers on fixed salaries, such as teachers, most government employees and many similar groups. As a sample, the salary of the average teacher rose from approximately $1,475 at the beginning of the war to $1,800 at the end of the war. By no conceivable juggling of the figures could this be made to cover the rise in prices. Teachers as a group received increases in salary of from 15 to 20 per cent. The cost of living on the most modest estimate possible rose 30 per cent. This meant that the teachers had suffered a loss in their standard of living of approximately 10 per cent. Taxes had increased and probably took another 10 to 20 per cent more than they formerly had. This would probably indicate that the typical teacher had suffered a decline in the standard of living of at least 25 per cent.

Wage earners in manufacturing, even after allowing for the rise of prices and increasing of taxes had more money left than they had before. Their standard of living had definitely improved. The standard of living of the teacher had dropped. The farmer, after allowing for rise in prices and increased taxes, had more money left. His standard of living had risen. Not so for many of the professional workers. Social workers, school teachers, librarians, most government employees, almost all people on fixed pensions suffered a drop in their standard of living during the years 1940 to 1945.

Estimates of the earnings of various groups of workers are given in the following table.

TABLE III

ESTIMATES OF EARNINGS OF VARIOUS OCCUPATIONS 1945

Doctors	$8,100	$7,600 – $8,600[1]
Engineers	7,600	7,100 – 8,100
Lawyers	7,200	6,600 – 7,800
Architects	6,300	5,700 – 6,900
Skilled Workers	2,800	2,500 – 3,100
Farmers	2,000	1,700 – 2,300
Schoolteachers	1,800	1,700 – 1,900
Unskilled Workers	1,700	1,600 – 1,900

[1] The true figure probably lies between these two.

These professional groups vary enormously in the amount they increased in income during the war years. It was inevitable that the income of the doctors would increase and fairly sharply. The army took almost one-third of the active doctors. The doctors that remained were overworked, but did unavoidably receive a substantial increase in income. The average earnings of doctors for the period 1920–1936 was approximately $5,700. The increased income of the doctors probably covered fully the rise in cost of living, and possibly also the increase in taxes.

The engineers have objected rather strenuously to any figures indicating that their average income did increase approximately 75 per cent from the average of 1920–36 to 1945. The average earnings in engineering for the period 1920–36 was approximately $4,400. The average in 1945 was approximately $7,600. This would indicate an increase of about 75 per cent. The typical engineer says he noticed no such rise in his standard of living. It has to be remembered that fully 30 per cent of this was cancelled by rise in prices; probably more than another 20 per cent was taken by increased taxes. So it is possible that many engineers did actually suffer a decline in their standard of living.

Some of the engineering associations have published figures that would indicate a much lower figure of annual earnings than the one given here. All estimates of earnings for a particular occupational group depend to a substantial degree upon the definition of the group. In general the group covered in the above estimate is confined to graduate engineers who hold a degree from a recognized university. The 1945 average is also very greatly affected by the large incomes that were made by many engineers involved in war work. Many of these engineers were in business for themselves and perhaps more properly should be called business men. But it would help to pull up the average earnings of those who were engineers. With these qualifications in mind there seems no reason to think that the figure of $7,600 as the average earnings of engineers is out of line either with their former earnings or with the increases that probably took place during the war.

The earnings of lawyers are much harder to estimate because the sample studies have not been kept up too well in recent years. But on the basis of the few figures that are available, an income of $7,200 for 1945 seems to be reasonable.

Architects were in great demand during the war years and both sample studies and known increases in particular cases would give an indication that a figure around $6,300 would be not far from the true figure.

The Earnings of Skilled Workers

The earnings of skilled workers reached a high level during the war of approximately $2,800 per year. The average earnings in the skilled trades based upon the period of 1920–1936 were approximately $1,430. This shows that the earnings in skilled labor almost doubled from their former average level. After allowing for price rises of approximately 30 per cent and taxes, it is clear that there is a very sharp rise in the standard of living of the skilled laborers.

The income of the skilled workers varied greatly around this average figure of $2,800. There were highly specialized machine tool plants in Detroit where the average of all the workers in the plant ran above $5,000 per year. There were other special cases where various skilled labor groups received relatively minor increases between 1940 and 1945. Some skilled labor was paid as little as $1,800 or $2,000 a year.

The Income of Unskilled Labor

The income of unskilled labor average slightly under $800 per year for the period from 1920–1936. During the year 1945 the average earnings of unskilled labor were approximately double this, or something between $1,700 and $1,800. During the height of the war period in special cases the wages of unskilled labor mounted to very high levels. On some jobs that formerly paid thirty, thirty-five, or forty cents an hour, the rates rose to $1.00 and even $1.50 an hour.

Income of Clerical Workers

The six or seven million people in clerical occupations as a whole fared extremely poorly during the period of rapidly rising prices between 1940 and 1945. All of the white collar workers as a group were averaging around $1,400 per year in 1940. That average had risen to perhaps $1,800 or $1,900 by 1945. This just about covered the rise in the cost of living. After taxes were paid there was undoubtedly a drop in the standard of living of the clerical group as a whole. Even the increases that did occur were not evenly spaced. The clerical workers in manufacturing fared much better as a whole than those in many other fields.

Incomes of Special Groups

After our entrance into the war there was a great agitation to limit salaries to approximately $25,000 after taxes. This was never done officially, but tax rates were raised to such a point that extremely high incomes were drastically reduced. During the high years the rate of taxation by the national government was in the neighborhood of 90 per cent. After state taxes were added to this, they perhaps went as high as 95 per cent or even higher. Almost no conceivable raise could have increased the income of individuals in the high income brackets after such taxes were paid.

All indications would show that the incomes of the Hollywood stars and the top business officials were reduced during the war period. Many industrialists had an increase of a substantial order in their dollar incomes before taxes. There were tens of thousands of smaller business men who had been losing money or making very little who greatly improved their situation between 1940 and 1945. Those people who were making incomes of $50,000 or $100,000 before 1940 generally suffered a decline in their income after allowing for price rise and taxes.

Estimated Life Incomes of Major Occupational Groups

The last five years have substantially raised the average life income if it is figured on the basis of the past twenty-five years. There is always grave danger in attempting to extend the past trends into the future. This is particularly true in a period such as 1946. If all prices are allowed to rise it will be inevitable that many wages will also have to rise. If on the other hand, the government adopts a policy of holding prices approximately where they are then many incomes will vary relatively little for some time.

The rate of growth of economic efficiency in this country has tended to raise incomes something around two per cent for very long periods of time. Presumably that rate of economic progress is not over. That growth will affect occupations differently however. Those occupations that obtain drastic control of their numbers will fare relatively better than other occupations. If facilities for education and training are widely extended, then the occupations at the bottom of the economic scale will tend to rise in comparison with those higher up the scale.

If all occupations were open to all people and occupational guidance were adequate, we would expect substantial further movement out of the low paid occupations. The general occupational pattern of a country changes relatively slowly in normal times. An increased amount of guidance and a further expansion of training should do much to raise the total income of the whole country and to increase the actual earnings of all the important groups.

H. F. C.

EDUCATIONAL GUIDANCE.

Relation of Educational Guidance to the Total Guidance Program

Since educational guidance is an integral part of the general guidance program, its special functions should be described in relationship to the total program. A good guidance program is concerned with the development of pupils as persons. It is based upon a realistic attitude toward individual differences and toward the fact that teachers deal with pupils in groups. Guidance is a coordinated, developmental process in which pupils, teachers, parents, administrators, counselors, physicians, psychologists and other specialists share responsibility for the welfare of the individual pupil.

The functions of guidance are: (1) to understand the individual pupil and help him assess his abilities, interests and needs; (2) to help him become acquainted with resources and facilities in the school and community which are available for his information and experience; (3) to help him make the best possible use of his opportunities; (4) to help him evaluate his experiences, clarify his objectives and make plans for his future.

The Special Functions of Educational Guidance

Within this general framework for guidance, the educational counselor performs four important functions which are mutually and reciprocally dependent: (1) he helps the pupil to make educational plans consistent with his abilities, interests, and goals, and to select appropriate curricula and courses; (2) he helps the pupil to explore educational possibilities beyond his present school level; (3) he helps the pupil to succeed in his educational program; (4) he has responsibility jointly with other members of the faculty for suggesting modifications in the curriculum and in the administrative arrangements of the school to meet better the needs of students.

Assisting Pupils to Select Curricula and Courses

This includes helping the pupil to choose courses which (1) are of interest and value to him at this present stage of development; (2) will qualify him for advanced work in the same subjects, for admission to higher schools or colleges, for employment, or for future social and cultural development.

Guidance in choice of curricula and courses of study requires that the counselor understand the individual pupils; be well informed about the courses of study, including content, methods, adaptability to individual differences; and be able to help the pupil see the relationships between his needs and the educational opportunities available to him.

At each step in his educational progress, the pupil carries with him not only knowledge and skills but also attitudes and feelings acquired through previous school experiences. These, as well as social and vocational interests, influence the pupil's choice. The wise counselor will become acquainted with the experiences the pupil has had in previous classes or schools and through interviews, conferences, and cumulative records will gain insight which will help the pupil to make wise choices from available offerings, and to make a good adjustment to the new class or school.

While previous school experiences have direct bearing upon the pupil's choices, other influences also affect his attitude toward school work and plans. Home activities and the ambitions of his parents may determine his choice of school program. The educational counselor establishes good working relations with parents in order to increase his understanding of the pupil, to inform parents of offerings of the school and to interpret to them the special needs and characteristics of their children as they are evidenced among their fellows in the school. Cooperative relations between school and home are based upon mutual good will and interest in the well being of children.

Employment, either part-time during the school year, or full-time during school vacations, is another source of knowledge and self-understanding. Since work-experience gives students opportunity to participate realistically in our modern American culture, it may have value for college preparatory as well as for prevocational students. In some cases, work-experience has led the pupil to appreciate the value of school work and has direct bearing upon his choice of courses and curriculum.

In the long run, each pupil must make his own selection of courses. He will be assisted by parents, teachers, and counselors. This assistance will be most valuable if it is based upon reliable, realistic information. Pupils should be encouraged to assess their own abilities and limitations. They should learn to interpret their experiences and to understand that multiplicity of evidence from a variety of sources is more significant than snap judgment based upon biased or partial information. It is the counselor's responsibility to judge the extent to which the individual pupil is sufficiently mature to evaluate his abilities and achievements objectively and wholesomely.

A pupil who has some appreciation of his assets and liabilities is more likely to make a good investment of his time and interests if he also has sufficient information about the courses of study before he selects his program. He should know something of the general content of each course, how it is taught—whether in laboratory or shop or chiefly from textbooks; its potential value to him culturally or vocationally. Many schools write descriptive bulletins about courses. Pupils tell one another about subjects and teachers. In some schools pupils visit classes in which the teachers present typical lessons. Conferences may be scheduled for teachers and pupils to discuss course offerings.

In addition to the content, method and usefulness of the course, pupils should understand the standards of achievement. They should realize that a course in physics requires mathematics; that finger dexterity is essential to success in some fields; that statistics show the relatively large number of persons who start in certain fields of work only to fail. It is better that pupils appreciate both their own abilities and the characteristics and requirements of the courses offered and select on a basis of careful weighing of values than that they fail by trial and error or succeed by accident rather than by design for educational achievement.

Choice of Advanced School or College

Selection of courses within any one educational level is closely related to the pupil's choice of an advanced school or college. He should know the institutions that offer the work in which he is most interested. Then he needs to know which of these has the best standing. He needs criteria by which to judge schools and colleges: reputation, quality of instruction; facilities such as libraries and laboratories, the attitude of the administration toward the welfare of students—health services, housing, provision for social life. If the school provides specific vocational training, what is its reputation among employers; what proportion of its graduates succeed in state or local qualifying examinations? What about financial expense? Does an expensive tuitional trade or commercial school offer better training than the nearby public school?

Books, college catalogues, bulletins, occupational monographs, lists of accredited schools, audio-visual materials in the form of motion pictures, posters, recordings are important sources of information. Educational counselors should see that pupils know how to read critically college and school catalogues. Many schools and colleges provide supplementary information for prospective students by assigning personnel officers to visit schools and confer with pupils, counselors and parents. Pupils, parents and counselors may be invited to visit higher institutions.

The rôle of the educational counselor in this area is to be well informed as to the best sources of information, to mobilize and make available these sources so students may have ready access to adequate information, to encourage students to investigate critically, and to give whatever help or advice is pertinent. The counselor has additional responsibility to give to the receiving school or college the best possible data about individuals entering that institution. Cumulative records supplemented by personal conferences are channels of communication that help bridge the gap between educational levels. The educational counselor thus becomes an agent in a good program of articulation between class and class or between school and school.

Since education, and therefore guidance, is a continuum, there is no one point where educational guidance for the present leaves off and that for the future begins. The counselor assists the student to recognize the direction in which he is going and to map out in general the highways that have greatest promise of leading to his goals.

Educational Success and Failure of Pupils

The success in school work of any pupil is conditioned by many complex and interrelated factors. Teachers, parents, counselors, experts from many fields need to share knowledge, skills and insights. The educational counselor recognizes that the characteristics and qualities of the individual himself often are directly responsible for success or failure. Intellectual abilities, health, special aptitudes and interests, handicaps, ambition of parents, economic and social pressures, cultural influences, contribute directly or indirectly to educational progress or retardation. Previous school experiences including the quality of basic training, development of good or poor study habits, actual achievements in former classes or schools, satisfying or unsatisfying contacts with teachers and fellow pupils also affect success and failure.

The counselor can contribute to the educational success of the individual pupil by helping him (1) to choose courses for which he has sufficient aptitude, ability and previous training or experience to insure success providing he is interested and makes the necessary effort; (2) to analyze obstacles he encounters in class work and to plan to overcome them by improving methods of study; (3) to acquire good techniques for problem-solving and for making the best possible use of available personnel and facilities; (4) to achieve educational success commensurate with abilities and interests.

Implications from Educational Guidance for Curricular and Administrative Development

The fourth function of the educational counselor is to share jointly with others in the faculty responsibility for improving the school or college. Consideration of individual differences should influence markedly the course of curricular development. The educational counselor is aware of pupils for whom there are no satisfactory courses or whose failures are due primarily to the fact that subjects and methods are inappropriate to their needs. He also is conscious of the requirements of professional and occupational areas. He recognizes the importance of developing both curricular and extra-curricular experiences that satisfy the needs of children and adolescents. If the school democratically offers good educational guidance and within limits set by law or other restrictive conditions, allows pupils to make their own choices, the implications of action based on these choices, will be recognized and included in a cooperative, well coordinated whole-school program.

Together these specialized and coordinated functions of educational guidance operate to help each student make the best possible investment of his time, abilities and interests. These functions are performed best by means of appropriate methods and techniques in the hands of qualified counselors.

The rôle of the student, of the adviser, and of the school with respect to the functions of educational guidance may be summarized as shown on page 311.

Techniques for Educational Guidance

Three types of techniques are employed in educational guidance: (1) those designed for work with pupils individually; (2) those appropriate to work with pupils in groups; (3) those which the counselor uses with other adults and with community groups in mobilizing and making available school and community resources and services.

Well established techniques used in all fields of personnel work are essential to effective educational guidance; interviews, observations, tests of abilities and aptitudes, physical examinations, samples of pupils' work, records which give a long-range developmental picture of the individual, of his home conditions, health, intellectual abilities, personality, educational progress, interest and goals. These tools in the kit of the counselor are not ends in themselves but, if skilfully employed, are dynamic instruments for good guidance.

Although knowledge about pupils is not in itself a guarantee either of insight or understanding, evidence drawn from a variety of sources over a period of time should provide a better basis for educational counseling. Isolated facts may seem inconsequential. On the other hand, they become significant when seen in relationship to other facts and to the whole changing pattern of interests with its consistencies and inconsistencies, stresses and strains, satisfactions and dissatisfactions.

The scholarship record, tests of intellectual abilities, aptitude and achievement, samples of creative writing or art, interest inventories are of special value in educational guidance. They give information and insight concerning the individual's actual achievement as well as his ability to succeed in school work, those special assets and liabilities that affect his success, his attitude toward school experiences; his interests.

For purposes of educational guidance, the counselor not only utilizes techniques that contribute to understanding the pupil, but he also helps the student assess his own abilities and interests. Thus, educational counseling consists in part in teaching the pupil himself how to utilize techniques. For example, a good interview in

THE STUDENT	THE ADVISER	THE SCHOOL
Becomes aware of his abilities, interests, and needs	Studies the abilities, interests, and needs of each student	Provides facilities for the study of individual students
Examines resources and facilities in the school and community and consults experts	Makes resources, facilities, and experts in the school and community available to student	Provides class and extra-class activities; develops cooperative relationships with the community in order that students may have access to facilities and experts
Selects with approval of adviser and parent those experiences which promise to be of value to him	Approves or disapproves the student's choice	Makes provision for the student to exercise choice and to enter upon the experiences chosen
Examines his progress with the adviser. Modifies his procedures to insure improvement through experiences chosen	Studies the progress of the student; advises modifications in the light of development	Provides a flexible procedure throughout the school so further modifications can be made as they are indicated
Evaluates his experiences in the light of— a. Development of his abilities and interests b. Satisfactions and annoyances c. Self-mastery	Helps student to think through his experiences; approves or disapproves	Provides time and opportunity for reflecting and planning
Decides upon the values gained by using certain procedures; plans the next step with the approval of the adviser and parent	Helps student to select and use procedures for future planning; helps him to plan the next step; approves or disapproves	Provides opportunities and makes possible the program for carrying them out

itself is an educational experience. The pupil learns how to ask questions, to exchange points of view with the interviewer, how to utilize and interpret information and advice. Techniques properly employed strengthen the pupil and help him to solve his own problems.

Although in the long run all guidance, including educational guidance, is individual and personal, much valuable ground work can be laid in group discussions. Techniques appropriate to educational guidance in working with groups of students include all of the methods used by teachers in any good instructional program. The rôle of the educational counselor in group work is to (1) present information that is of common interest and value to all members of the group. For example, "how to read a college catalogue," "how to select a good school of nursing," "what courses are available for pupils entering this school," "what are the pre-requisites for curricula," (2) give pupils instruction and practice in participation in group discussion, preparing for conferences or group meetings: training in outlining and taking notes, in asking good questions, in avoiding domination of discussion by the few. The full gamut of ways and means of obtaining and sharing information in group activity is used by the educational counselor in giving background for individual guidance.

Techniques for mobilizing and making available school and community resources differ from those previously discussed, only in approach, since the persons involved are adults rather than adults and children. Through interviews, committee work, conferences, discussion groups, the rôle of the educational counselor is to seek out sources of information and experience, to work with other adults in making these available to children in the form which they can utilize, and to provide better or newer resources and facilities as the need for these becomes evident. Some of the best resources in the community may lie idle not only because they are not well publicized but because they are not available in forms appropriate to young people. Thus, to establish effective cooperation between school and community agencies in interests of educational guidance, channels of communication must be established on a basis of mutual confidence and shared responsibility. The educational counselor utilizes all methods and techniques to develop this joint program: he participates in community activities; he interviews parents and experts; he attends conferences; he invites experts to meet with students and, if necessary, interprets to them the best ways of working constructively with young people or of presenting their program and information in forms most appealing to youth.

Coordination of Educational Guidance in the Total School Program

The functions of educational guidance can be performed effectively only if they are coordinated as integral parts of an over-all guidance program which, in turn, is coordinated with the total school program. Guidance must be coordinated both vertically and horizontally in the school system.

Vertical coordination, between guidance in elementary and secondary school levels is essential in the interests of economy in use of staff and facilities, constructive school-home-community relationships and, most important, the welfare of individual children.

A good program of educational guidance, whether in elementary or senior high school, follows the same general administrative policies that govern selection of personnel, policies affecting relationships of the classroom teacher to the specialists, use of community resources. Staff, especially experts, can be utilized more effectively and economically if their services are available to the system as a whole and if there is consistency and continuity in the supervision of their activities.

This is equally true with respect to all other guidance functions: health, vocational, social, personality development. It is particularly important that philosophy, with respect to relationship with parents, attitudes toward "disturbed" children, provision for counseling services for able and gifted children, proper utilization of community resources, be consistent and over-all in their implications for practice.

Progressive development of individual children is essential. There are certain focal points at which continuity and progression are particularly threatened unless there is an awareness of the need and provision for bridging the adjustment. These points are when children leave elementary school for junior high school, leave junior high school for senior high school and leave senior high school for the next stage. Unless there is an over-all policy and provision for orientation, the individual youngster may well be handicapped in making his best adjustment in the new environment. It is unlikely that channels of communication and necessary procedure will be provided unless guidance is administratively and professionally coordinated.

Guidance must be coordinated *horizontally* both in terms of specialized services and of general counseling. From the point of view of economy and in use of staff and facilities, in the interests of individual children, horizontal coordination is essential. A counselor cannot help a student assess his own abilities and make a long term educational plan or even help him choose his course of study for the next semester unless as a "generalist" he utilizes the findings and judgments of the experts: teachers, physicians, social workers, psychologists, whoever may have worked with the individual. In the interest, then, of giving the best service to children and of capitalizing upon any investment in the services of staff, horizontal coordination is mandatory.

Also, from the point of view of community relations, coordination is essential. In the long run, resources and facilities of the community are most effectively used by schools if they are integrated with and made supplementary to the school program.

These problems of integration and coordination must be recognized administratively. Unless it is the responsibility of some person to clarify policies, establish communications, and see to it that coordination does function, the job is neglected or is done opportunistically and sporadically rather than as a clear cut, planned, well organized and understood policy with procedures and facilities appropriate to the program as a whole.

An Effective Program for Educational Guidance Must Be Coordinated with but Cannot Be Merged Administratively with Curriculum

Both guidance and curriculum operate in the interests of the child. Guidance cannot operate in a vacuum or independent of curriculum; nor can a teacher really teach unless she understands the needs, abilities and interests of her students and unless she adjusts her teaching to individuals and at the same time helps individual pupils to adjust to the group. Thus, coordination and integration of curriculum and guidance is axiomatic. However, it is a false assumption that guidance does not have unique and different functions which cannot be treated administratively as though they are one and the same with those of the curriculum. The essential significant differences between the functions of guidance and curriculum are both in philosophy and in techniques. In guidance emphasis is upon the individual as a person. Counselors and guidance experts are trained to think in terms of the individual, to employ methods and techniques suited to work with individuals and their approach to management and discipline is developmental. In the curriculum, emphasis is upon "class groups" and subject matter. Traditionally and currently, emphasis in teacher-training, particularly but not exclusively, on the secondary level is upon subject matter; teachers are employed, placed and supervised as "teachers of English," "teachers of fifth grade." This does not mean that the individual who is the concern of guidance is not operating in a group, nor that the classroom teacher is not interested in individuals but the point of reference is different and it is that difference that is significant.

Techniques employed in guidance differ from those used in teaching. This is partly a reflection of teacher training and partly a difference in the kinds of techniques which can be employed in work with pupils in groups or in work with individuals. Teachers are trained in techniques appropriate to class groups. These techniques are exceedingly important and when skilfully employed create a favorable class atmosphere and make for efficiency and progress. However, techniques appropriate to guidance are almost non-existent in teacher training. Unless teachers are particularly interested in or challenged to take special training in employing techniques designed for individual guidance, they are not even aware of such techniques, let alone skilled in using them.

Guidance techniques, especially designed for work with individuals have been developed and employed by experts in professions which deal primarily with persons. These techniques or case work methods are essential to effective person-to-person relationships whether in educational guidance, medicine, social service, personnel work, in industry. The essential tools of case work are interviewing, testing, observation, recording significant data in case histories, case conference method, etc. A guidance program for schools must employ these techniques, adapting and modifying them to the particular school situation as needed. Provision should be made for in-service training of staff not only in the use of these techniques but in interpreting them to teachers, parents and, at times, to children themselves.

It is unrealistic to assume that such important instruments will be developed or used skilfully unless provision is made consciously and systematically. In the long run, teachers will teach better because guidance workers employ such methods particularly if, at the class or grade level, guidance and curriculum are well coordinated.

Thus, guidance and curriculum are mutually and reciprocally related but each has special functions to perform in the education of children. Unless a trained, experienced administrator with the guidance point of view is responsible for guidance and in a position to make his judgment effective administratively, the weight of tradition, training and currently accepted practices underlying curriculum, will submerge the essentials of guidance in the interests of classroom procedures.

The special functions of educational guidance, implemented by appropriate techniques in the hands of qualified counselors are performed in the framework of the total guidance program. Each school and school system will modify policies and procedures in terms of local needs. The principles of coordination and integration, however, are basic to any program which has as its main purpose service to youth.

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M. B.

EDUCATIONAL RECORDS BUREAU. Organized in the fall of 1927 as a nonprofit service and research agency for schools and colleges, the Educational Records Bureau assists member schools in their psychometric work. Annual achievement and aptitude testing programs are sponsored by the Bureau, enabling the participating schools to obtain maximum administrative and guidance benefits and making possible a continuous study of pupils. The Bureau is closely associated with the Cooperative Test Service and the Committee on Measurement and Guidance of the American Council on Education.

The Bureau is an organization of educational institutions (355 schools were members in January, 1944) and school membership extends service privileges to all affiliated with it. The annual membership fee ($15.00) carries with it subscriptions to all Bureau publications, advisory services, the right to arrange for scoring of tests and related services, and the privilege of purchasing materials at nominal rates. For further information, write to the Bureau, 437 West 59th Street, New York 19, N. Y.

R. Z. K.

ELEMENTARY SCHOOL. If it is important for young people to know something about vocations before they enter the working world, the elementary school is the most important place for this to be taught. A great deal has been written, even if not much has been done, about vocational guidance in the secondary school. This is all very well and certainly has its place, but it may not have occurred to those who are so excited about it that they are missing well over half of the population. Moreover, they are missing the half which needs vocational guidance the most. It is the half which enters the working world with the least preparation. According the 1940 Federal Census there are about seventy-five million people in the United States over twenty-five years of age. Forty-four million of these had never advanced beyond the eighth grade. If there is no vocational guidance in the elementary school, and in general it would seem that this is true, then the great majority of the people who enter the working world do so with little or no information about it. This may account for the many misfits which can be seen all about us. The human waste which results from people being misfitted vocationally is probably our greatest squandering of resources. It is time that those who plan what is done in the elementary school give this problem their attention.

Doubtless there are some who might contend that introducing vocational guidance in the elementary school is too far from employment and the ideas are too complex to be useful to elementary school children.

If well over half of the people of America never go to school beyond the elementary school then they must go from school into some type of employment. At least it is to be hoped that they do. If this is true then vocational guidance is not remote for the elementary school students. As for it being too complicated, or abstract, it is far less abstract than many of the other things that we try to teach in the elementary school. We still try to teach sixth graders how to divide two-thirds by four-fifths, although there is scarcely a teacher in the land who can lucidly explain why you invert the divisor and multiply. Nor is there anyone, man or boy, who has ever encountered a situation where he needed to divide one fraction by another. It is a pure abstraction which can only be learned by rote and ought to be abandoned. Talking about the various requirements and advantages of vocations is really child's play compared to this illustration.

Whatever is done about vocational guidance in the elementary school must be done within the present framework. It is useless to talk about what we could do if the schools were run entirely differently. They are not run differently and they probably are not going to be in the near future. Introducing some notions on vocations calls for no great overhauling of our present procedures.

As a matter of fact, if we were to introduce practical matters, such as vocations, into our elementary curriculum we could begin to operate with a purpose which is within the grasp and meaning of the children who are taking the work. It would call for a change in approach, perhaps, but not such an important one that it would not be within the understanding, capacity, and acceptance of the elementary school teachers.

It may seem trite to say this, but one of the first essentials in helping children to know vocations is for the elementary school teacher to know more and more about children. She must also know about them in relation to their home and their community. She must know their parents so that she may know the vocational background of the children with whom she is dealing. When she has this background, she is ready to begin to incorporate vocational information into the regular subjects which she teaches.

When we teach reading, for example, we usually are reading about people. If we are not, we probably are getting into the abstract. Perhaps one of the most interesting things about the people we read about is what they do. What kind of person was this, and what did he do for a living? How many occupations did he have? We might have to revise our material a little in order to bring it more up-to-date. We can illustrate great interest in numbers of vocations by the life of Benjamin Franklin who had many different vocations. Since many of Franklin's vocations are out of date, we need to spend a good deal of time on modern people. C. F. Kettering and George Washington Carver are good examples.

Most elementary schools have a subject which they present which they call Social Studies. Unfortunately, social studies as ordinarily taught really consists of a course in history and a course in geography. If we can really make our offerings in social studies social in nature so that they combine geography, history, and all the other elements of social living, we would have an admirable spot for the introduction of vocations. If our social studies is to become an area where we teach common learnings we can do such things as community surveys where children would learn what really goes on in their communities and, quite naturally, the vocations involved.

They could come to see people operating in vocations. They could see the kind of people they are and some of the requirements for what they do. It would not be much of a job to modernize our social studies into common social learnings that would give us an opportunity to show what the working world is like. Incidentally, more meaningful history and geography would be learned under this procedure than is now learned.

Space does not permit further discussion of what might be done in the various subjects as they now are. Some space has to be devoted to the numerous devices which can be developed. Any good elementary teacher or principal will be able to improve on the list which follows.

It would be easy from time to time and in various places to have discussions on the subject of getting a job. This is well within the understanding of the later elementary school child. This should include discussion of the agencies in the community, if any, which can be of assistance to the person who has left school. Children need to know the importance of neatness and grooming in seeking jobs. It might even be well to know that if the job is one that involves old clothing and dirty work it would be unwise to apply for it in one's Sunday suit. The problem of methods of approaching an employer could be taken up. We should have a good deal of discussion on what employers want for various types of jobs. By this is not meant so much the peculiar knowledges and skills as punctuality, willingness to work, ability to get along with people, and the general ability of the applicant to put himself in the employer's place. Children can ask themselves what they would want if they were hiring someone for that particular job. They can do some meaningful letter writing in connection with making applications.

Probably every elementary schoolroom in the country has a bulletin board. These bulletin boards are put to various and wonderful uses. They have considerable possibilities from the standpoint of informing children about vocations. The ingenuity of students could be involved in securing pictures and clippings about the working world. A student who is particularly interested in a certain vocation should be encouraged to produce some art which would be indicative of the value or requirements of this occupation. If planners of bulletin boards were vocation-minded the chances are that the bulletin boards would improve not only in appearance but in practical value.

School movies are becoming more and more common, but I think we need to ask ourselves sharply what it is we show movies for. Of course, they lend themselves to many good uses. Too often, however, we show a movie just so we can see a movie. Whenever we use a visual aid of this nature, it is necessary to point the purpose of it early and to stick to that purpose. In the area of vocations there are many excellent movies. Probably it is easier to teach vocations by movies, considering what is available, than almost anything else.

A full use of the community as an educative device would automatically result in the teaching of many vocations. We have only begun to use the community to this end. A long time ago, we started taking students on trips, but these trips were mostly pointless and usually turned into holidays. Systematic planning for knowing the community through the medium of trips would result in much more meaningful trips and the observation of many vocations. Back in the classroom a discussion of the vocations observed, their possibilities, and requirements, would add a great deal of meaning to the trip.

Another very effective way of using community resources is to have the various people in the community come in and talk about their work. These should be the people who do the common work of the community, such as those who leave school at the elementary level may do. This procedure has many values. It enables us to get the members of the community interested in the school and more willing to support it. It gives a great lift to relatively humble workers who learn that what they have to say has worth. It is probably more enlightening with regard to the actual vocations than any other procedure we can indulge in. Surely the person working at a vocation or trade is able to tell us its virtues and disadvantages better than we can get them in any other way.

Many of our so-called activities can give vocational information and interest. This is particularly true when the activity is not too closely related to the vocation of both the parents of the children. In urban areas gardening can be very illuminating and informative. Many young people who know nothing about the soil can find out whether they like to work with it and whether they have the capacity required for it. In rural areas other kinds of activity would probably be more illuminative.

Perhaps we ought not to entirely overlook the possibility of the use of tests in vocational guidance in the elementary school. There are many aptitude tests which are applicable to the elementary school age. They do not, however, predict ability too accurately and should not be taken too seriously. They can be very useful if they are not misinterpreted and if too much importance is not attached to them. Great harm has been done to vocational guidance by the idea that some expert can give a battery of tests and tell one what he ought to do.

One device somewhat related to tests is the questionnaire. It would be helpful to the elementary school teacher in serving as vocational guide to know as much about the child as she possibly can. Some hints of information can be secured by giving the child simple questionnaires which involve his likes and dislikes, the occupation of parents, the occupations that he knows about, and the ones he thinks he would like to follow. This is not too reliable because children of the elementary school age have not thought much about what they are going to do, particularly if we have not led them to think about it and have not given them experiences that would lead them to do so. But the questionnaire can be useful, provided not too much is expected of it and what information it does yield is wisely used.

It really is a sad commentary on our educational system that so many people leave it so young. Back in the days when employment was plentiful this perhaps was not as tragic as it is today. Doing a competent job of vocational guidance in the elementary school might have the effect of encouraging young people to stay longer in school. If a child has a pretty good notion of what he wants to do and if he discovers through vocational information and counseling that he is not prepared to do it, it may encourage him to seek the preparation he needs. If our high schools become more functional in their offerings so that what is learned in high school can be more directly related to what the child is going to do, then surely an awareness of the requirements of various vocations and the feeling that those needs will be met should result in a great number of people continuing in school where now they are inclined to drop out.

I have then contended that vocational guidance in the elementary school is of extreme importance, since the majority of our people never go beyond it. I have proposed that such vocational information should be taught within the present framework. I have suggested the introduction of vocational information into the regular subjects using reading and social studies as examples. I have proposed a number of devices such as the bulletin board, community agencies, community contacts, use of local citizens, movies, trips, and school projects.

We are then ending on the same emphasis with which we started. All over the country we see people who have left school who are not prepared for any vocation nor have any idea what vocation they ought to pursue. They fall into ruts and places for which they are not fitted. They spend their lives doing things they are not particularly adapted to and are not interested in. For the most part they, therefore, do not do a good job. This represents human waste. One of the most important ways in which we can eliminate this human waste is to get some of this preparation into the elementary school where we will catch most of the people who will not be adequately and happily utilized without such information.

E. C. K.

EMPLOYABILITY, INDEX OF. "Just as persons differ in intelligence and personality, so they differ in their employment chances."

That premise was carried to its completion—the construction and testing of an employability rating scale—by Bernard S. Newer as partial fulfillment for an advanced degree in the Maxwell School of Citizenship and Public Affairs, Syracuse University and has been in use since the initial testing period (January, 1939) in the Onondaga County welfare department.

"When, after many years of considering 'intelligence' as an unanalyzable quality, it was defined in terms of measurable components, prediction became possible," the study states in its preface. "Individuals were no longer 'intelligent' or 'unintelligent,' but degrees of intelligence were recognized. Our thesis is that 'employment chances' also may be considered in terms of measurable components rather than the usual categories, 'employable' or 'unemployable.'" The study justified this conviction.

In the beginning, several months were spent in determining what characteristics might provide measurement for employment expectancy. The list of component characteristics, in turn, had to be analyzed into more basic items for measurement, and a method devised by which these characteristics and their component elements could be made to furnish values for the purpose of rating applicants for jobs.

Employers were first canvassed as to characteristics they considered important when hiring employees, and this same data was obtained from personnel directors or employment managers of firms employing more than 100 persons. Attempts to use census materials failed because no census report contained enough information pertinent to the study, so employers and personnel directors were petitioned.

In addition, the assistance of trained counselors in the United States Employment Service was secured. The result was a compilation of a cross section of data on the employability of individuals in relation to such factors as age, experience, unemployment record, dependents, nationality, race, religion, citizenship, physical defects, education and wages. Home conditions and personality were later additions, resulting from a study made by Westinghouse on employability factors.

The next step was computation for means for every item of each characteristic, calculation of standard deviations from the mean, measurement of variability, computation of algebraic formulae, charting of raw scores and weighted averages and achievement of final ratings as the basis for construction of a scale. It was then necessary to test various methods of rating, in order to find that which held the best predictive value. To determine the latter, a sampling method was devised in cooperation with the Onondaga County Department of Public Welfare. The first was a two per cent sampling of the January, 1939, case load of 7,500, representing 10,000 individuals. Factors obtained as a result of the sampling were correlated to the number of months of employment secured over a 40 month period extending through April of 1942, and the relationship between highest scoring persons and the greatest amount of employment was established.

Because preliminary tests proved the validity of the instrument, it was accepted for use in rating clients to determine their employability. Further proof of the validity of the scale was furnished by studies of the scale in action showing that the rank in which persons were hired ranged from excellent downward. Eighty case workers employed by the county welfare department aided in the first study made in January, 1943, when the case load was 1,200, representing about 2,400 individuals, and a 31 per cent sampling made (741 individuals). The second study made in February, 1944, made by 60 case workers, represented a 9 per cent sampling (163 individuals, case load of 935 or 1,800 individuals).

These later studies showed that all persons have some degree of employability, disproving the fact that, theoretically speaking, there are unemployables. Those with the lowest ratings or least employable were hired last. Those with high scores or excellent ratings were employed first. The scale, as worked out to this date, applied to business and manufacturing—but it points the way to similar scales for the professions. Scales could be worked out for specific occupations, together with multiple factor analyses and a correlation between employment expectancy scores and merit as an employee.

The author's interpretation rates those with a score of 85 or above as having excellent chances of employment, while those within the brackets of each 10 point drop are rated respectively as "good," "fair," "below average" and "poor." Those with ratings below 45 are considered "very poor."

Although those most concerned with the scale—including Dr. Robert F. Steadman, professor of political science in the Maxwell School of Citizenship and Public Affairs at Syracuse University, in whose department the studies were made—were convinced they had in their hands an accurate method to measure employment expectancy, an additional check was made on WPA rolls. The result was additional confirmation of the validity of the scale as an instrument to measure employment expectancy.

The scale proved of value to the department not only from the planning aspect, but also in the evaluation of the individual client. For the case worker, a client with a high score presented a definite challenge if employment were not quickly found for him. Those working with the scale felt that even in times of little employment, the individual with a high score should not remain out of employment very long. As employment opportunities increase, the top scores of welfare clients should decrease. In time of high employment any client with a "fair" or above average chance of employment remaining on relief rolls should act as a danger signal to a case worker.

In observing the workings of the scale in WPA offices, the author noted that greater care should be expressed in any future WPA certification, and that "persons with extremely high scores should never be certified, because the wisdom of encouraging this group to accept any form of relief is questionable."

"Again," continues Mr. Newer, "it is poor case practice to compel a highly employable individual to compete in the private employment market on an unequal basis. It would probably be a better course to dip lower in the scores for WPA certification. This would not necessarily cause lessening in the quality of WPA labor because it must be remembered that the 'employment expectancy scale' is not based exclusively on merit. There is no certainty that an individual with a low score will make a poor employee, nor can anyone be sure that a high scoring individual will make a good employee. The individual with a high score is merely one who is more likely to be hired by an employer according to the statements made by employers."

Used in relation to the times, the scale is workable under any economic set-up. With the return of employment normalcy, the scale can go back to its original concepts of employment expectancy. It must be remembered that the over-all score determines employability.

Score interpretations for individual factors are as follows:

Age: The employment prospects are highest for the 20 to 30 year old group; lowest for the 70 and over group. From 18 to 20 years, the score is moderately high, and increases rapidly to the peak of 25 to 30 year-olds. It remains moderately high for the next two age groups, 31 to 35 and 36 to 40 years. Then it begins to decline, being pretty low after the 55 year old mark is reached.

EXPERIENCE: It's hardest for the "no experience" group to get a job; easiest for the two to ten years of experience group to find work. The rise from the "no experience" to "two years of experience" is sharp and rapid—get even a little experience, and the problem of getting a job becomes infinitely easier.

UNEMPLOYMENT: If you are out of work one to three months, your chances of being re-employed are highest on this factor. The longer you are out of work, the lower sink your chances. After you have been out of work a year or more, have been trying all that time to get a job and cannot, job chances are pretty slim. They are down to almost nothing at the end of seven years, as far as this one item is concerned.

NATIONALITY: Native-born Americans are at the top and not included in the scale, but for foreign born groups, the highest rating goes to the Canadian and British, with Scandinavian next, then Polish, French and German. The scores go down—although they are still good—for the Italian, Greek, Russian, Spanish and Mexican groups, and are pretty near bottom for peoples of Oriental countries.

DEPENDENCY: The married person with dependents has the highest chances for job getting (and nothing is said in the study about his having to get a job as a possible accelerating factor in the situation). Next best chance is for the single person with dependents, then the single person without dependents, and finally the married person whose spouse is working. But there is scant variation among these factors—they are relatively pretty much on a level with just a slight decline.

RACE: Top chances go to the white race, only a third as much for Indian, even less for colored and about a tenth as good for "yellow," as far as this single factor is involved.

RELIGION: Protestants have the highest employment expectancy, with only a fraction of a point of difference between Protestant and Catholics, then Jewish and atheist—but the lowest rating differs only by a couple of points, so that religion is not such a prominent factor in job expectancy in Onondaga County, and in most counties in the country or in most communities except those in which "sects" or religious groups flourish and the citizenry is highly conscious of religion.

Citizenship: There is a rapid and consistent drop from "American born" (9.4) through "Naturalized" (8.0) and "First Papers" (5.4) to "Alien," with the lowest expectancy (2.1).

Physical Defects: These have understandably low scores. Least handicapped is the person with weight abnormality—the excessively fat man's score is about half as good as that of a person of normal weight, on this factor. It is about 40% as good for those having vision defects; less for speech defects and asthma; still less for arrested tuberculosis and hearing defects; and lowest for syphilis, which is practically nil when known.

During the past few years, industry has learned to disregard physical defects—or to profit by them. During the extreme shortage of manpower, employers increasingly employed workers who were physically handicapped—men and women who formerly had never been considered on the labor market. They had been public charges, many of them—but they got and held jobs.

For instance, men and women who were hard of hearing were found to be particularly adaptable to certain factory jobs in which the amount of noise was a detriment to those with normal hearing. The deaf or partially deaf couldn't hear the noises—and therefore weren't bothered! People with crippled legs have been found to be very adaptable to inspection and assembly jobs, even though they couldn't do any work standing up. The blind or partially blind have been discovered to be exceedingly good for extremely fine inspection work which utilized their sense of touch—more highly developed than that of persons with normal vision. Even mild cardiac cases have been found to be useful in light factory labor, such as checking, taking inventories, tool crib attendants and clerical work of all types, and also in doing shipping work in the lighter industries.

Education: This factor is a complex one and is not applicable to executive or professional fields in which higher education is a requisite to getting a job and increases job expectancy. But for business and factory work, a person with a technical or business school education has the best chances. For these two particular fields (excepting executive posts) the college graduate is next; then the high school graduate; persons with advanced college degrees, and those who have partially completed college—all ratings being pretty high and close together. But there is a decided drop from this level to the "high school incomplete" group, and another drop to the level of the grammar school graduate. The job chances are lowest for the "grammar school incomplete" group.

Wages: If you are paid $26 to $30 a week, you will probably get another job in industry or commerce much quicker than if you got more or less. And if you are in the over-$70-a-week bracket your chances are almost as poor as if you were in the $5 to $9 a week bracket. For while the one may designate inexperience or inability, the other end of the wage scale might designate highly trained skills in which there are few openings or job opportunities.

Prison Record: Any kind of a prison record cuts your score on this item to less than half—and that is only for a simple misdemeanor. This goes down to one-fifth for a felony charge, and one-twentieth for a federal offender.

Termination of Work: If you are laid off from your last private employment, your chance of getting employment again is best for this factor. If you quit, your chances are less—set at 6.2 points, to be exact. If you are fired, they are rated only half as well, at 3.1.

Sex: Sex does not play much of a part as a job getting factor. Men have more chance than women, but both scores are pretty high and fairly close, differing less than two points.

Personality: Where this factor is involved, preference goes to "alert," which is at the top of the list and has the best job getting qualities. At the bottom of the scale, for this one factor, is "cannot speak English." Other high ratings go to those who "express themselves well," "follow directions," "are pleasant" and "have neat, clean clothes." Unfavorable items meriting low scores include "are grouchy," "have dirty clothes," "do not carry out directions" and "are sluggish." In fact, for sluggards, the chances are pretty near nothing in job getting. This is applicable to all lazy workers—if people give you a job and pay you a salary, they expect you to work, not goldbrick.

Home Conditions: If your home conditions can be described as "have a good reputation" you are at the top in employability as far as this factor is concerned. Living in a neat, clean house and having good credit also rate tops. Lowest chances go to "is reputed to drink considerably" and none too good are "lives in a dirty home" and "has many debts." You cut your chances to little over a third if you are disliked by your neighbors.

Although unemployability may seem low, or even nil, in respect to any single factor, the final score is based on the total of all the factors, and is not unduly influenced by a single item. But the factors listed were judged essential by employers in the original tests, and proved themselves essential in subsequent ones. By rating themselves against the scale anyone can pretty accurately predict whether they are one of those who is employable, or one of those whose job getting expectancy is pretty low.

During the war years, many communities surveyed their industries and business to determine the number of jobs which would be available. Such surveys were occasional and spotty, however, not general. Theoretically, there is no way of determining the exact number of jobs which will be open at any period in this country. But there is a way of determining the employability of any single individual. And the scale is unaffected by numbers.

The scale has been in use for three years, and therefore has covered both the pre-war depression years, and the wartime peak years. Those at the bottom of the scale—the unemployables—are jobless even in peak employment periods; those who are rated "poor" may be employed during peak employment periods, but upon the return of better workers, whose employability ratings are high, these "poor" workers are replaced by "good" workers. Even during poor or low employment periods, those at the top of the rating scale are the first to get—and keep—jobs.

A second study, made at the close of December, 1943, proved the value of the scale as an instrument to predict employability. On that date, with the welfare case load at 1,000, no person scoring over 85 or classed as "excellent" was unemployed, and only 1 per cent of those rated "good" were unemployed—in all cases unemployment being the result of temporary illness. In January, 1939, when unemployment was more widespread and the welfare case load was 7,500, 10 per cent of the "excellent" were unemployed, 27 per cent of the "good" and 23 per cent of the "fair" were also unemployed, and they were rated in order of their scoring, as the January, 1943 check, when the case load was 1,200, proved. Those with ratings below 45 per cent are still unemployed—although the author points out that in periods of high employment, many persons normally considered unemployable hold jobs, and families never before self-supporting can support themselves.

Mr. Newer has brought this second study up-to-date by checking the welfare case load at the end of February, 1944, to further prove the validity of the instrument. He points out that the correlation data sheet has a P.E. equal to ±.02 and R equals +.72.

M. Z. C.

EMPLOYEE VOCATIONAL COUNSELING. Within the past 20 years and particularly within the past 5 years, a new type of guidance functionary has appeared whose clientele is exceeded in numbers only by the public school group. Employee counseling or personnel counseling, as it is sometimes termed, which had its beginnings in 1927 in the now famous Western Electric Company experiments in the Hawthorne plant in Chicago, has now been commonly accepted in business, industry and by the public as an integral part of a well rounded personnel program.[4] The continued interest of industry in counseling is evidenced by Gardner in "Employee Counseling in Private Industry," Public Personnel Review, January, 1945, who concludes, "The Western Electric type of personnel counseling is apparently here to stay. It is not an emergency measure and has had a slow but steady development."[3] Barron reports in "Public Employee Counseling" which appeared in the Public Personnel Review in January, 1945, that there are now full time counselors in at least 25 of the departments and agencies in Washington, serving between 150,000 and 200,000 employees. Civil Service Commission Departmental Circular No. 439, October, 1943, has given employee counseling in the Federal Service definite status and defines it as "an organized approach to the solution of individual employee problems which affect their general morale, efficiency, and productivity, the purpose being to assist management in maintaining a degree of stability in its working force necessary for the fulfillment of its operating responsibilities."[5]

The development of adequate counseling services for employees was greatly accentuated by the influx of new workers into war industries and agencies and now that the war is over we may reasonably expect many adjustments in regard to the scope and nature of the counseling program. Management, however, has learned that employee counseling pays big dividends in worker productivity and therefore, it is here to stay. Many organizations, recognizing the complex problems of adjustment confronting returning veterans are now adding to their personnel staff, counselors equipped by background and training to serve as "veterans' counselors."

It must be recognized that the employee counselor is not primarily a vocational or educational guidance specialist, although these functions rank high among his list of responsibilities. The employee counselor is necessarily a general counselor concerned with the variety of problems of adjustment confronting the worker. Problems pertaining to housing, finance, health, family, personality, etc., affect worker satisfaction and productivity just as much as matters pertaining to vocational and educational plans. As a "general practitioner" the employee counselor must be prepared to provide assistance with a wide variety of problems and know when to make referrals to specialists, if available. Whether he is ideally prepared or not, he will be called upon to provide much educational and vocational guidance service. Many ambitious employees who wish to look and plan for positions of greater responsibility ahead will formulate long range plans and through part time study endeavor to prepare for such jobs with or without help. Too often their plans are unrealistic and prompted by clever but unscrupulous advertising by "gyp schools." Other employees who desire to enrich their lives and develop more worthy leisure time activities through part time study are at a loss what to take or how to proceed. Without the help of the counselor they are likely to take the wrong track and to give up completely discouraged.

The fundamental principles of employee vocational counseling are essentially the same as employee counseling generally but the specialized nature of the function raises certain peculiar problems and calls for additional emphasis upon a number of basic counseling tenets.[1]

Unlike vocational counseling in schools and colleges, the program, while designed to serve the individual, must be justified in terms of a better worker who will be more productive in the business, industry or public agency. As McGowan points out, "Only those maladjustments of employees that are reflected in the employment situation are of justifiable concern to employee counselors." We must never lose sight of the fact that employee counseling is provided by management not as a supplementary form of compensation to employees but as a means of improving production. An employee counselor who permits his missionary zeal to cause him to advise any considerable number of workers to formulate vocational plans inimical to the best interests of the company or agency will soon be looking for a new position in which to promote his sociological gains. This blunt statement may sound discouraging but fortunately in an agency with progressive personnel policies and a well organized personnel program, there is seldom conflict between what is best for the individual and what in the long run is best for the company or agency. The less enlightened firms and agencies which operate on a basis of worker exploitation are not likely to sponsor a program of employee counseling. Employee vocational counseling should strive to further better job adjustment by helping the worker understand likely avenues for advancement within the organization, if they exist, and what preparation is likely to further such advancement. If no such opportunities exist within the organization, the counselor with the approval of management of the general policy involved, should encourage the worker to give competent and loyal service while preparing through part time study for more important responsibilities elsewhere. Progressive management has learned through experience that there is no gain in trying to retain a worker indefinitely in a job far below his capacities and abilities and that to attempt to hold him for any extended period of time produces a malcontent who is a liability rather than an asset. Employee vocational counseling should give the present job significance in terms of its contribution to the long range vocational plans of the worker and result in greater production. A realization on the part of employees that management is interested in helping them progress as individuals, even though it may mean training a replacement, will be reflected in improved general morale and employer-employee relations. In short, it is good business.

Employee vocational and educational counseling should be available on a voluntary basis. It is axiomatic in personnel and guidance circles that the need for counseling arises when the individual is confronted with problems of adjustment which he cannot solve satisfactorily without help. If it is made known that the employee counselor is prepared to talk with workers about their educational and vocational plans and if the counselor establishes a reputation for being of real assistance, he will be sought out by those who need help. This does not preclude the possibility of referrals by the supervisor, although the bulk of contacts should be initiated by the employees themselves. Displays of posters and bulletins describing available educational facilities and carefully prepared notices in the local house organ will stimulate interest in further education and cause many employees to drop into the counselor's office for further information.

The function of employee vocational counseling is to help individuals decide *for themselves* upon a vocational goal and to take the necessary steps to prepare for and to enter upon the chosen field of work. It is for this reason that vocational and educational guidance cannot be separated. Although employee counselors are aware that the function of counseling is to help individuals to help themselves, there is always the temptation to attempt to save time by telling or at least rather definitely suggesting what the person ought to do. Even if the counselor is reasonably certain as to what constitutes a desirable course of action, he should follow the slower but wiser policy of educating the client to understand his own problem and, in consultation with the adviser, to develop a plan for solving it. One test of a counselor's success is whether or not his clients become increasingly self-sufficient and capable of standing on their own feet. The professionally trained counselor is as much interested in helping clients acquire the technique of self-guidance and problem solving as he is in meeting the immediate problem at hand. A person who is dictatorial and prone to tell individuals arbitrarily just what they ought to do will not make an effective counselor. The only effective guidance for the normal person is self-guidance. It is the function of the adviser or counselor to help the client analyze his problem, to present information helpful in its solution, and to stimulate and direct his thinking so that he develops a program of action pointing toward a solution.

Employee vocational counseling requires adequate data concerning the client and knowledge of work opportunities both within the organization and in occupations generally. The counselor also needs to have at his finger tips information in regard to the training and educational resources within the organization and the community. His usefulness to the client will depend upon his ability to supply cogent bits of information vital to an understanding of the problem and its solution.

The employee counselor is in an ideal position to gain real insight into the abilities, aptitudes, interests and personality characteristics of the employee. Instead of having to depend largely upon psychometric measures, supplemented by a questionnaire and several interviews, as is the case in most guidance agencies, he can obtain first hand knowledge directly from supervisors or even observe the employee first hand as he goes about his duties. Ordinarily he is not compelled to reach a judgment hurriedly but can consult with the employee over a period of time. With the cooperation of the supervisor, try out experiences may be arranged for the client and his whole work history may be regarded as exploratory in nature. Psychological tests, ratings, anecdotal reports, and production records may be used to supplement these more informal sources of information concerning the potentialities of the employee. Under actual operating conditions the pressure of numbers and time may prevent such a thorough study but the possibility is there.

Unless the employee counselor is trained in the use and interpretation of psychological tests or has someone on his staff qualified in such matters, he should not attempt to use them. Without their use the counselor will be deprived of one of the most valuable tools in vocational counseling.

Most experienced vocational counselors are wary about accepting the expressed vocational interest of the client at its face value. They know that due to limited contacts and inadequate experience an individual may not be in a position to know in what work he might become interested. Then, too, frequently expressed interests are compensatory in nature, as in the case of the socially inadequate worker who would like to be a supervisor because of the greater social prestige connected with the position. Real interests can be judged better by what the worker does than by what he says. Human nature is very adaptable and the employee who at first is certain that there are no opportunities for him in the firm or agency to do what he thinks he wants to do, may find later that he is intensely engrossed in what the organization has to offer and is finding it a very satisfying career. The employee vocational counselor should discourage flitting from job to job and company to company in search of an adjustment that must be made within the worker himself.

The average employee counselor is reasonably familiar with the range of work opportunities within the organization or knows how to secure such information rather readily but knows relatively little about occupations generally. For this reason, if he is professionally conscientious, he is hesitant to attempt vocational counseling. Yet the problem is there and usually there is no place in the community to which he can refer the employee for specialized help. Even if the counselor himself does not have the time to become an expert on the requirements, advantages, and disadvantages of many occupations, he can assemble an occupational information kit and make it available to employees. Various national agencies such as the United States Employment Service, the National Roster of Scientific and Specialized Personnel, and the U. S. Office of Education have produced excellent monographs, bulletins, and leaflets on occupations which will be read with avidity by ambitious career seekers. By assembling such kits the Armed Forces found it possible to provide vocational guidance to naval and military personnel even though the counselors were not occupational information experts.[2] Again it is a case of helping individuals to help themselves.

Educational counseling may be vocational in motive or it may be entirely independent. Many employees who are quite satisfied with the vocational route which they see stretching before them in the organization, may still be in a quandary as to what studies to pursue in their leisure time "just for the fun of it." It is the responsibility of the counselor to call the attention of employees to the facilities for recreation and formal and informal education which exist in the community and to advise with them, when requested, concerning the suitability of such activities for the particular individual. There would be no point for instance in encouraging the individual with only normal intellectual ability to enroll for credit in an extensive course offered by a local university when he might more profitably sign up for a popular lecture course in the same subject offered without credit or examination in the local Y.M.C.A. The shorter work week with its longer period of leisure time makes it essential to provide guidance for worthy use of such leisure time.

As in all types of employee counseling, the effectiveness of the counselor will depend not only upon his technical knowledge and skill, but upon his ability to win and retain the cooperation of management and to secure the confidence and respect of the employees. He must cooperate loyally in furthering management's policies and yet at the same time represent the welfare of the individual employee who has honored him with his confidence. Unless the client has the assurance that he may talk frankly to the counselor in professional confidence, as he would to his physician, his attorney, or his spiritual adviser, he will be reluctant to divulge many facts without which there can be no real understanding of the case. If he fears that what he says will be carried directly back to his supervisor or discussed with his fellow workers, he will avoid saying many things of an intimate personal nature germane to the problem. The client must feel that the counselor is representing his interests and should thus be told anything that the counselor needs to know to have a true understanding of the situation. Maintaining professional confidence does not preclude the possibility of discussing certain elements of the situation with management or fellow-employees, provided there is a judicious selection of what is to be divulged and what is to be kept in confidence. Let a counselor get the reputation of talking too much and breaking confidences, and his usefulness is gone.

It may be seen from the foregoing that employee vocational counseling requires a broader background of knowledge, skill and tact than any other phase of employee counseling, with the possible exception of problems growing out of personality disorders. Counseling problems pertaining to choice of occupation and educational activities are bound to arise and the progressive counselor will welcome them as an incentive to broader professional growth and understanding.

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M. D.

ENGINEERING, APTITUDE FOR. Engineering has been defined as the "art and science by which the properties of matter and the sources of power in nature are made useful to man in structures, machines, and manufactured products." Viewed in these terms, the engineering field is broad in scope and diversified in character. As Bingham [2] has emphasized, "There are really a dozen engineering professions, and within each there are many different kinds of work to be done." Manifestly, all branches of engineering do not require for success identical sets of personal qualifications nor do they all demand the presence of certain psychological attributes in equal measures. Nevertheless, there runs through the professional preparation and service of the several branches a common tract of activity which lends cohesiveness to the whole and which accordingly permits the job analyst or the vocational counselor to regard them as legitimately related disciplines.

Scrutiny of the training programs prescribed for the various engineering fields provides ample evidence for this point of view. In the first instance, each field is classified as a profession in that it requires extensive and systematic preparation beyond the secondary or vocational school level. It is in this respect that the engineering pursuits diverge from the mechanical trades. Secondly, instruction in quantitative methodology, the physical sciences, and mechanical design and construction receives common emphasis in all engineering curricula. The beginning pre-engineering student, irrespective of the branch in which he elects to specialize, may expect to encounter several courses in higher mathematics. Doubtless, he will also be introduced to principles of mechanical design in such courses as engineering drawing and descriptive geometry. Physics will occupy an important place in his training program.

As the pre-engineering student progresses toward his field of specialization, he receives instruction in principles and techniques which particularly characterize work activities in that sphere. The aspiring mechanical engineer gains a knowledge of foundry and machine shop production, of machine design and thermodynamics. The prospective electrical engineer learns principles of electrical design and dynamo laboratory procedures. The advanced work of the student entering architectural engineering emphasizes properties of construction materials and building design. That of the student in the civil engineering curriculum includes surveying and the design and maintenance of public works.

It is patent that the ability to profit by instruction in each of the forementioned engineering fields, or in any other, such as industrial, sanitary or Diesel engineering, demands a combination of educational achievements, aptitudes and vocational motives of which the guidance worker should be fully cognizant. That many who embark upon costly engineering training programs do not possess such an aggregate of personal attributes is attested by the notoriously high student mortality in engineering colleges. Holcomb and Laslett [6] have called attention to the extensive survey, known as the Investigation of Engineering Education, which was conducted for the Society for the Promotion of Engineering Education. Examination of the academic records of over five thousand engineering freshmen in twenty-five large institutions disclosed that virtually forty per cent of the students failed to re-enroll for the work of the sophomore year. Furthermore, little more than one-quarter of the students successfully completed the prescribed course of study. Of those who failed to graduate, more than half had terminated the study of engineering during the freshman year. Holcomb and Laslett [6] found the rate of engineering school mortality at Oregon State College to be in substantial agreement with these statistics. Concerning the Investigation of Engineering Education, Kandel [7] has observed that the majority of the drop-outs were attributable to scholastic inadequacy.

What of the engineering school graduate? What, in the main, is the personal equipment which has permitted him to satisfy the exacting demands of advanced technical training while many of his fellow students have been eliminated through failure? Regarding this issue, it must be admitted that full knowledge of the psychological make-up of the potentially successful engineer must attend the results of more exhaustive study. Yet, much valuable information is already at hand.

Investigators are agreed that engineering training places a high premium upon general mental ability. Whatever other assets a prospective engineer may possess, ineptitude for higher forms of learning and for abstract thinking will predispose him to failure. Many studies have convincingly demonstrated the positive relationship between general intelligence and engineering achievement although, as will be shown, specialized achievement and aptitude tests often surpassed the intelligence test in predicting engineering school performance. Those who have worked with occupational ability patterns have cited superior mental ability as a marked characteristic of the competent engineer and of the successful engineering student. A second and more particularized requirement for satisfactory achievement in engineering is a high degree of visualization. Frequently termed structural visualization or spatial relations, this mental factor concerns the ability to think about the physical relations between objects in space. The engineering student must be adroit in the mental manipulation of spatial symbols and in perceiving sizes, shapes and locations of geometric forms. In his work in engineering drawing and descriptive geometry, in reading and developing diagrams and blueprints, and in patternmaking, high visualization ability is invaluable. It would appear, further, that this factor plays an important rôle in comprehending functional relationships between the parts of a mechanical device. When the tested abilities of different occupational and educational groups are under comparison, the superior performance of engineering subjects in the perception of spatial relations is commonly evinced.

Because the preparation of a student in any field of engineering is likely to entail considerable work in quantitative methods and in techniques of precision measurement, aptitude for higher mathematics must be considered a sine qua non of engineering success. The learning of higher algebra, trigonometry, analytical geometry and calculus, and the application of these branches of mathematics to the solution of engineering-type problems, the deft manipulation of a slide rule, and the calibration and operation of complex instruments of measurement all bear testimony to the importance of the quantitative method in present-day engineering. Indeed, modern physical science makes such a heavy demand upon mathematics in the formulation of its principles and the design of its equipment that the vocational counselor would do well to discourage the choice of a professional engineering career by a student who exhibits a serious lack of mathematics aptitude. Granting the existence in such a student of outstanding manual skill and a strong interest in machines and constructive activity, there is a distinctly greater probability of his meeting success in a skilled mechanical trade than in engineering.

While an effective index of mathematics aptitude has come to be regarded by more than a few investigators as the best single forecaster of success in engineering college, evidence bearing on the prospective student's mechanical aptitude is also certain to be of importance to the vocational counselor. The superior engineering candidate is one who possesses good understanding of physical principles and relationships and who, furthermore, has keen insight into the functioning of mechanical devices. In his leisure time as a youth, he is likely to have demonstrated aptness for structural activities, such as using tools, building model airplanes, experimenting with small electric motors, fixing home appliances and making minor electrical repairs. He is frequently quick to perceive the crucial principles involved in the construction and operation of various mechanisms.

Diverse other attributes in the make-up of the promising engineering student or apprentice are worthy of note. He excels in mechanical drawing. Apposite this skill, Bingham[2] has listed as an engineering qualification the ability to interpret mechanical diagrams and prepare blueprints. The intimate dependence of these activities upon the power to visualize, already discussed, is readily recognized. Inasmuch as the professional engineer must engage to an appreciable degree in abstract thinking, high verbal facility is likewise an asset. Dodge's occupational ability patterns demonstrated some years ago that engineers, as a group, possess a superior vocabulary. This observation has more recently been confirmed many times. Of especial value to the worker in this field is a strong technical vocabulary. Finally, it should be mentioned that the successful engineering candidate is characterized by a mature and persistent interest in the activities and work surroundings of his chosen field. His background reveals a marked attraction to the study of physical science and participation in constructional activities as well as an abiding scientific inquisitiveness concerning mechanical devices.

Admittedly, while all of the forementioned characteristics are not to be found in fullest measure in every successful engineering student, the liberal possession of each may be confidently said to predispose toward high achievement in the profession.

The study of engineering aptitude has not terminated with the enumeration of the psychological requisites of satisfactory performance. Much work has been devoted, both in the United States and Europe, to the identification and development of effective predictors of engineering attainment. On the Continent, where the apprenticeship system has been traditionally prominent, the validity of prognostic devices has characteristically been determined with reference to supervisors' judgments of engineering apprentices. In the United States, partly because college training is viewed as the crucial part of professional preparation for engineering work, and partly because of convenience and economy, grades earned in engineering school have generally been employed as criteria for the experimental evaluation of predictive measures. The forecasting instruments utilized by American workers fall into several categories: (1) previous educational record; (2) objective tests of secondary school achievement; (3) tests of intelligence and general mental ability; (4) special aptitude tests, including those of mechanical aptitude; (5) tests of dexterity and manipulative performance; (6) personality and interest inventories. Brief consideration of the merits and limitations of each of these classes of predictors is in order.

Following the triumph of mental testing in World War I, it was commonly supposed that intelligence tests would far surpass the secondary school record in the prognosis of college achievement. The reports of investigators over the past two decades have generally failed to confirm this conjecture. As a rule, researches in many areas of academic preparation, including that of engineering, have shown that the secondary school performance bears as close a relationship as any other class of measures to subsequent proficiency in college. Where the prognosis of engineering school success is under consideration, a knowledge of the grades earned in high school mathematics, especially algebra and geometry, and in physical sciences such as physics and chemistry is of more than minor importance. A record of the grades received in the natural sciences is also likely to be very helpful. In many instances, it is the practice to employ the student's high school graduation rank, based on all courses taken over the senior year or a longer period, in computing his most probable level of college attainment. Despite the many apparent limitations of the graduation rank as a forecasting instrument, it has proved reasonably effective and is convenient to use.

When a student has already undergone a semester or more of engineering school training, the best predictive index of his achievement in the advanced work is, by all odds, the record earned in the college courses previously completed. Many workers have found first-year attainment to be highly prognostic of the ultimate four-year college record. Of special value in indicating the probability of success over the entire engineering school program are the grades earned in freshman mathematics and science courses. Kandel,[7] for example, has noted a study which found that fewer than three per cent of engineering freshmen who failed both first-semester mathematics and physics eventually graduated. Guidance workers would do well to remember that the clearest evidence bearing upon a counselee's future educational success comes from the record of his past educational achievement. Moreover, the more nearly the work already completed approaches the new course work in content, the more accurately is the former likely to foreshadow the quality of performance in the latter.

Second only to previous educational record in the effectiveness with which engineering school proficiency may be forecast is the high school content or achievement examination. Such an instrument is frequently invaluable as a diagnostic as well as a prognostic aid in guidance situations. Standardized achievement tests have gained reasonably wide acceptance among institutions offering engineering instruction although it would appear that a relatively small number of them employ the test results as a direct means of determining eligibility for admission. Researches sponsored by the Society for the Promotion of Engineering Education and the Engineers' Council for Professional Development,[7] as well as those undertaken by numerous private workers, have demonstrated fairly close relationship between achievement test scores and engineering school grades. Correlations exceeding .70 have occasionally been reported, although the magnitude of the typical relationship is somewhat below this figure. Achievement tests in mathematics and physics have, as a rule, provided the most accurate indices of future attainment in engineering curricula. Content examinations in the other sciences and in English usage, while of undeniable predictive value, have shown themselves to be somewhat less effective. In the front ranks of standardized test series which have yielded marked relationships with student performance in engineering college and which have been widely studied in this connection are the Iowa Placement Examinations, the Iowa High School Content Examinations and the Cooperative Achievement Tests. The mathematics and science sections of these tests have proved especially helpful. Scores earned upon Regents' Examinations and upon the College Entrance Examination Board series have also been shown to be of considerable prognostic value.

Notwithstanding the widespread use of the general mental ability or intelligence test in student selection and guidance programs, this class of instruments does not appear as sensitive as selected parts of the high school achievement test or certain specialized aptitude tests in prognosticating the performance of scientific school candidates. The principle would seem to hold that the broader the applicability of the measuring device to educational prognosis, the more limited its value in prediction work of a particularized type. Thus, the general mental ability test may outstrip the specialized test in forecasting the achievement of college students in general but frequently loses ground to the latter in distinguishing between potentially successful and unsuccessful students in localized fields, such as engineering. Correlations between paper-and-pencil tests of general mental ability and first-year grades in engineering school have usually ranged between .40 and .55. The American Council on Educational Psychological Examination for College Freshmen and the various forms and revisions of the Army Alpha have been perhaps the most thoroughly studied measures of this type with reference to the prediction of grade attainment in the engineering college. Because the former instrument is periodically revised and is admirably standardized for college use, it is widely employed in educational circles. Among other general ability tests which have demonstrated usefulness in this regard may be mentioned the Ohio State University Psychological Test, the Thorndike Intelligence Examination for College Entrance, the Otis Advanced Examination, and the Otis Self-Administering Test of Mental Ability, Higher Form. Irrespective of the general mental ability test to be employed in appraising the aptitude of engineering school candidates, it would seem highly desirable to supplement this record with measures of some of the more specialized qualifications for training in the engineering field. A survey will be made at this point of special ability tests which have served this aim effectively.

A pioneering effort to assess the abilities of prospective engineering students was undertaken by Thurstone about 1919. This work culminated in the publication of the series of examinations entitled Vocational Guidance Tests for Engineering Students. At least two of the characteristics which are still today deemed crucial personal requirements for the study of engineering, namely, mathematics ability and physical science information, were examined by Thurstone's early battery. The complete series, which required several hours to administer, yielded correlations with engineering school performance mainly between .30 and .45.

In more recent years, three specialized aptitude tests have stood forth as promising measures of engineering aptitude. These are the Cox Tests of Mechanical Aptitude, the Bennett Test of Mechanical Comprehension, and the Engineering and Physical Science Aptitude Test. The first-named instrument is British; the other two are American. All three have in common the function of appraising scientific reasoning and insight into principles of physical science at the advanced level demanded by professional engineering training. The Cox Tests of Mechanical Aptitude comprise a group of ingenious subtests. One of these presents a series of mechanical sketches from each of which the essential operation is missing, and the test subject is required to indicate how this operation is performed (Mechanical

Models). A second subtest presents diagrams of various mechanisms and the subject answers questions pertaining to the mechanical principles involved (Mechanical Diagrams). Still another subtest (Mechanical Explanations) measures the subject's comprehension of mechanical operations by a somewhat different approach. Brush[4] found the Cox series most effective among a group of mechanical ability tests as a predictive index of achievement in engineering subjects. Limitations of the Cox tests are their relatively low reliability and the cumbersome and time-consuming scoring procedures.

The Test of Mechanical Comprehension is composed of sixty pictorial problems which evaluate the subject's understanding of a variety of principles of physical science. There are two forms, AA and BB, of which the latter is the more difficult and, consequently, likely to be somewhat more discriminating in the upper range of the distribution of scores. The test has demonstrated considerable effectiveness as a predictor of achievement in engineering-type subjects.[8] The Engineering and Physical Science Aptitude Test is a six-part examination designed to measure a number of the abilities important in advanced scientific training. It encompasses three parts of the Revised Iowa Physics Aptitude Test, and abridged forms of the Moore Test of Arithmetic Reasoning, the vocabulary section of the Moore-Nell Examination used in educational guidance at The Pennsylvania State College, and the Bennett Test of Mechanical Comprehension, AA. As concerns the prediction of performance in engineering courses, high validity coefficients (above .70) have been found both for the composite Engineering and Physical Science Aptitude Test and for abbreviated forms of this instrument.[5]

Among the profusion of specialized aptitude tests are several others which are helpful in the appraisal of engineering aptitude. The visualization factor is effectively measured by such tests as the Revised Minnesota Paper Form Board, the Form Relations Test of the National Institute of Industrial Psychology, and the Thurstone Test of Surface Development. A test of three-dimensional visualization, the Wiggly Block Test, is of questionable value because of low reliability. Mann's Engineering Drawing Aptitude Placement Test, in addition to assessing the subject's ability to manipulate spatial concepts, taps certain other skills which are entailed in the work of a draftsman. Comprehension of scientific terminology may be profitably evaluated by use of the Michigan Vocabulary Profile. In a study of research engineers at the Detroit Edison Company, it was shown that the three scientific sections of this test yielded a closer correspondence to ratings of job performance than any of the other instruments investigated.[9] The present writer found that an experimental vocabulary test of 150 technical terms distinguished reliably between superior and inferior freshman engineering students.[3] The Stanford Scientific Aptitude Test measures, among other things, the ability to think critically about various problem situations. Whereas scores on this test have been found to be significantly correlated with performance in engineering jobs by some workers,[9] others have questioned its serviceability as a measure of engineering aptitude.

Though familiarity with common mechanical appliances and the ability to put them together quickly and accurately are regarded as desirable personal equipment for the engineering candidate, psychological tests purporting to measure such skills have evidenced little worth in forecasting achievement in technical studies. Neither the Stenquist Assembling Test nor its successor, the Minnesota Assembly Test, appears to distinguish reliably between the potentially successful and the potentially unsuccessful engineering student. Bingham [2] has suggested that these instruments are perhaps more appropriate for predicting progress in the learning of a mechanical trade. Nor do specific tests of motor dexterity and manipulative ability appear greatly useful in judging a subject's suitability for the study of engineering. The O'Connor Finger and Tweezer Dexterity Tests are a case in point. Whereas these instruments provide a valuable indication of a subject's aptitude for work calling for the deft manipulation of small objects and the use of small hand tools, they nevertheless fail to tell us whether he possesses the crucial attributes of the successful engineer. In the same category of manipulative tests, useful perhaps in selecting workers for certain types of manual and shop jobs, but of little importance in assessing engineering aptitude, are the Minnesota Rate of Manipulation Test and the Purdue Pegboard. Finally, it might be noted, in agreement with Bennett and Cruikshank,[1] that special ability tests which emphasize mainly speed of performance, as does the MacQuarrie Test for Mechanical Ability, possess limited value for the prognosis of engineering achievement.

A word concerning vocational interests. It is obvious enough that the combination of high engineering aptitude and low engineering interest is not the most effective formula for professional success. There is sufficient evidence at hand to indicate that many of the failures in engineering college and many of the transfers from engineering to other curricula may be attributable in large measure to a fundamental lack of enthusiasm for engineering subjects. The vocational interest questionnaire can consequently perform a highly useful function in the guidance of prospective engineering students. Partly because it has been standardized primarily upon professional groups and partly because of its wealth of available research data, the Strong Vocational Interest Blank for Men appears most helpful in this regard. Many studies have found low but significant correlations between scores on the engineering scale of this test and grades in engineering subjects. Whereas this instrument is not uniformly valuable in all cases of vocational guidance, careful scrutiny of the patterns of scores on the Strong blank may often lead to the identification of individuals whose basic lack of interest in the activities and conditions of engineering work predisposes to failure in this field.

Personality tests are probably somewhat less useful. Although it has many times been shown that engineers and engineering students tend to be more introverted and reflective than many other groups, these traits are not ironclad qualifications for engineering success. It has been suggested by Bingham [2] and others that personality test results may be more applicable in guiding subjects toward specific objectives within the field of engineering than in determining their suitability for engineering work in general. Thus, it is possible that prospective students who possess considerable aptitude for engineering and who are found by personality tests to be introverted, meditative and reserved might be guided into training as research engineers whereas others who are shown to be extraverted, socially expressive and ascendant might train as sales engineers.

It should be clear that the most effective selection or guidance of engineering applicants does not rest upon a single test but upon a carefully balanced battery of examinations designed to appraise the several major characteristics which constitute engineering aptitude. Moreover, test records need to be supplemented by every source of information which throws light on the individual's past experience, abilities and aspirations. In this regard, interview data bearing on the subject's avocational, vocational and educational histories are indispensable.

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H. B.

ENGINEERING APTITUDE TESTS

Engineering and Physical Science Aptitude Test. This is a group test developed at the Personnel Service Division of The Pennsylvania State College by Bruce V. Moore, C. J. Lapp, and Charles H. Griffin. It was designed expressly as an omnibus measure which would assess a number of the abilities important in technical training beyond the high school level. Its original and, to date, most extensive use, has been in connection with the psychological appraisal of men and women students engaged in relatively high-level war training for work of an engineering and physical science nature.[1] [2]

The test represents a compilation from a series of previously developed measures of aptitude. These measures include three parts of the Revised Iowa Physics Aptitude Test, and in modified form, the Moore Test of Arithmetic Reasoning, the vocabulary section of the Moore-Nell Examination used in educational guidance at The Pennsylvania State College, and the Bennett Test of Mechanical Comprehension, Form AA. These were selected from a larger number of experimental tests on the strength of their statistical relationships to the measured achievement of war trainees in engineering physics classes.

The six sections which constitute the Engineering and Physical Science Aptitude Test, their order of appearance and individual time limits are listed below:

Number of Test Part	*Title of Test Part*	*Time Limit*
I	Mathematics	15 min.
II	Formulation	10 min.
III	Physical Science Comprehension	10 min.
IV	Arithmetic Reasoning	15 min.
V	Verbal Comprehension	10 min.
VI	Mechanical Comprehension	12 min.

Working time for the composite test is 72 minutes. Administration time, including testing instructions, generally ranges from 80 to 90 minutes.

Since the Engineering and Physical Science Aptitude Test is designed primarily as a measure of training aptitude, its validity rests upon its effectiveness in segregating those persons who are likely to progress rapidly in technical training from those who are likely to falter during such training. Validation data come from two general sources, the performance of subjects in technical courses on the college level and the job training records of women in war industries. As concerns the first type of validation, statistical relationships were computed between part and composite scores on the test and the academic performance of 188 high-school graduates enrolled in a summer war training program of introductory engineering subjects given under the auspices of The Pennsylvania State College.[1] [3] Validity coefficients with average grade in the training program ranged from .49 for the Mechanical Comprehension part of the test to .63 for the Mathematics part. The composite six-part test yielded a correlation of .73 with over-all performance in technical training. Optimum weighting of the parts of the test produced a multiple correlation with average performance of .76. Abbreviated forms of the test, entailing selected parts, demonstrated predictive effectiveness only slightly below that exhibited by the complete form.

Industrial validation of the Engineering and Physical Science Aptitude Test has been carried out with three groups of women.[3] The test demonstrated value in the prognosis of achievement of young women receiving laboratory training in quantitative chemical analysis at a large ordnance plant engaged in the manufacture of TNT. In this study, a criterion of performance accuracy was established by combining the ranks earned by each subject in titration accuracy, calculating accuracy and balance accuracy. The Arithmetic Reasoning and Mechanical Comprehension test parts proved serviceable in a battery for predicting the achievement of women drafting trainees at a large aircraft corporation. Elsewhere, the Verbal Comprehension and Mechanical Comprehension test parts were effectively used in a five-variable battery developed for the selection of women chemical operator trainees at a synthetic rubber company. The test has been shown to be significantly more difficult for women than for men. Nevertheless, in situations where women are receiving technical training on an advanced level, it has demonstrated appreciable value as a prediction measure.

In general, the Engineering and Physical Science Aptitude Test has found two broad areas of usefulness: (1) as an aid to vocational guidance when professional training in the physical sciences is under consideration (2) as an aid to the selection of trainees or apprentices for technical work. The test has served these functions in both civilian and military settings.

The split-half reliability of the composite test, corrected by the Spearman-Brown prophecy formula, is .96. For the individual test parts, the reliability coefficients range from .68 to .93.

Percentile norms for the total test scores were established for adult men and women entering engineering and science courses.[1] Norms for men are based on 6,695 cases; norms for women are based on 2,295 cases.

The test is published by The Psychological Corporation, New York City.

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H. B.

Mann Placement Examination in General Engineering Drawing (Aptitude). This test, devised by Clair V. Mann, is one of the Missouri Engineering Aptitude, Educational, and Psychological Tests, and is known as Manntest No. 213001. It was first developed in 1927. The last revision appeared in 1937.

The purpose of the test is to predict achievement in engineering drawing. It is used at the Missouri School of Mines to organize superior, mediocre, and low sections as a means of facilitating instruction.

The first part of the test is a questionnaire concerned chiefly with previous relevant educational experience. There is a section testing directed reading and six other parts containing items about geometric terms and constructions, recognition of drawing instruments, and lettering. There are 240 items with a maximum possible score of 200. Each part has a time limit, and the total time is 100 minutes. A simple compass and a straight edge are required for each student.

Validity is determined by correlation with final grades in engineering drawing. Data from nine freshman classes at the Missouri School of Mines, involving 1,100 students, show an average correlation of this test with final grades in engineering drawing of .625. When a third of the final grade was determined by the author's objective final examination, a coefficient of .81 was obtained. The test shows considerable relation to likelihood of graduation from the four-year engineering course, for 84 per cent of all students graduating with their class were found to be from the top half of the class as determined by this test, while 77 per cent of the lower half were scholastic failures.

Quartile points, the mean, and the standard deviation of a distribution of 7,758 scores are provided with the test.

Odd-even reliability, based on 220 freshmen, is .91. The probable error of an individual score is 6.41.

The test is published by the Missouri Educational Test Co., 3027 Locust Blvd., St. Louis, Mo. Specimen sets are not available.

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S. S. M.

ENGLISH ACHIEVEMENT TESTS

Leonard Diagnostic Test. This test is designed to determine the student's ability to make actual use of his knowledge in punctuation and capitalization of sentences. It deals with all of the common opportunities for all punctuation and capitalization rules and gives the student an opportunity to use them as he would in a written composition. There are no catch sentences and no places where rare and unusual cases are tested. In addition each rule is tested carefully in a number of situations. So that all in all there are only 150 opportunities in a few sentences and each rule is tested several times..

The scoring device is simple and a chart goes along with the test which makes it possible for the teacher to enter the scores and check quickly on the errors which need special teaching. The test is thoroughly diagnostic, comprehensive, simple to administer and easy to score. The test comes in forms of A & B, of 52 sentences each. The reliability is .93 and the validity is .68.

is .68.

J. P. L.

Editor's Note: See also "Cooperative Test Service" and "United States Armed Forces Institute Examinations."

EPILEPTICS. Because there is much ignorance or misinformation about epilepsy and epileptics, definition and description is first necessary.

An epileptic is not a special kind of person: He is a cross-section person—mentally, brilliant, average, or dull; economically, rich, comfortable, or poor; physically, robust, medium, or weak; in personality, attractive, normal, or cantankerous. On this cross-section person has been grafted a symptom which is recurrent, but which varies greatly in frequency and intensity and hence varies as a limiting factor in progress. As a consequence of seizures, or oftentimes, of misguided or ignorant treatment by the public or doctors, complicating symptoms may arise such as physical injuries, the dulling of mentality, or alterations of personality. These, however, occur in only a minority of epileptics.

The chief problems of vocation, for a cross-section person, are dealt with by others in this volume. For the epileptic, only certain limitations imposed by his symptoms need to be considered. This is an individualized problem because the symptoms and the complications of no two epileptics are alike.

Definition

Epilepsy is a condition marked by abrupt loss of consciousness which may be momentary or prolonged and is usually accompanied by convulsive movements. There are three types of attack:

1. *Grand mal* (major epilepsy): In this type, loss of consciousness is accompanied by convulsive movements during which the person falls, becomes rigid, and has spasmodic jerking of the limbs. This lasts from one to several minutes and is usually succeeded by a deep sleep. In about one-half of the

cases the loss of consciousness is preceded by warning symptoms which may permit the patient to lie down or seek seclusion.

2. *Petit mal* (minor epilepsy): This form occurs only rarely in adults. The person merely loses consciousness for from five to fifteen seconds but does not fall or have convulsive movements. Such attacks are a handicap only in situations in which continuous attention is imperative, such as the operation of moving machinery or vehicles.
3. *Epileptic equivalents* (psychomotor seizures): In this type, which is relatively rare, there is loss of consciousness for a few or many minutes. The person, though rigid, may maintain his balance or may even walk about and act as though conscious.

A person may be subject to more than one type of seizure. The greatest diversity exists in the frequency and severity of attacks. Like the symptoms of headache, recurrent attacks may be of no consequence or they may be incapacitating, hence each case must be judged individually.

Causes

In about one-fourth of the cases some injury to the brain is at fault (encephalitis, meningitis, severe concussion, tumor, hardening of brain arteries, etc.). In 85 per cent of all cases the brain wave test (electroencephalogram) will show disturbance of the normal electrical currents of the brain, a valuable aid in diagnosis.

The fundamental cause is the inherent tendency or the predisposition to seizures, a tendency which was present when the patient was conceived. Seizures may also result from disorders of body function such as a great lowering of the blood sugar. Emotional disturbances due to unpleasant or terrifying experiences are sometimes followed by seizures in the epileptic. An epileptic seizure may assume almost any form, hence differentiation from fainting or hysteria and determination of the cause or causes of seizures requires competent medical examinations and advice.

Consequences

About 10 per cent of epileptics who are outside of institutions are affected mentally, memory and reasoning powers being seriously defective. However, fully two-thirds of patients are mentally entirely normal. About 10 per cent have difficult personalities, being stubborn, irritable, suspicious, and opinionated.[4] Personality defects, when present, are most common in patients who are mentally deficient. Between seizures, which may be days, months, or years apart, epileptics are as physically fit as the average worker. Mental or physical disabilities, when present may not be the consequence of seizures but merely coincidental. They may be permanent. Certain other consequences are more easily subject to correction. Discouragement, frustration, feelings of inferiority, the result of ostracism, and denial of opportunities for work or study because of the possibility of a seizure—these psychological handicaps may disappear under the influence of satisfying occupation.

New Methods of Diagnosis and Treatment

Much of the current pessimism about epilepsy is due to ignorance of the results of medical research in recent years. The electroencephalograph has provided a new method of study and examination. Being new and not as yet generally available, it requires some explanation. Electrical impulses originate in the brain and are carried by nerves to activate the whole body. The electrical pulsations of the brain are "picked up" from the scalp and, when amplified a million times, write a wavy line on moving paper. These are the so-called "brain waves." The instrument is similar to the electrocardiograph, which is used to register the electrical currents generated in the heart. The pattern of the brain wave record is modifiable by brain activity (such as opening and closing the eyes, by sleep, and by pain or attention) but under standard conditions in the normal individual the pattern is remarkably constant from day to day. Electrical records which are counted abnormal contain waves which are either too fast, too slow, or periodically are too high. Most frequently an abnormal wave is both too large and too slow or too fast.

Nine-tenths of epileptics have some abnormality of their records during a 15 minute period of observation. The form of this abnormality may give a clue as to the type of the patient's seizure, the severity of the case, and the location of any brain injury which may be present. Also, since the brain wave pattern is an hereditary trait, this technique may be useful in tracing the transmission of epilepsy.

As for treatment, bold but skillful brain surgery effects the cure of many whose epilepsy was due to tumor or scar of the brain. The greatest number, however, are helped by the use of a new medicine. This is phenytoin sodium (manufacturer's name, dilantin sodium). It has the advantage over bromides and phenobarbital in not being a sedative, and, when the dose is properly adjusted, it is more effective in controlling convulsive seizure. Many doctors fail to use sufficient amounts. If too much is given, unpleasant but not dangerous symptoms appear. The proper use of this medicine has improved (or could improve) the vocational outlook for the majority of the half million epileptics in the United States.

Choice of Vocation

In helping the epileptic to choose a vocation, the primary consideration must be his natural talents and preferences, his intelligence, the economic circumstances and the opportunities, local or general, for the carrying out of plans. The best occupation for anyone is that for which he has a natural aptitude and liking. Whether the person with seizures can get and hold work which he likes depends a great deal on the quality of the medical advice which he has secured and on the length of time he has had seizures and on their frequency and severity. Intelligence quotient and aptitude tests should, if possible, be made and information gained about psychological and social backgrounds and conflicts. It cannot be too strongly emphasized that work, both mental and physical, is good medicine for the epileptic. He has fewer attacks when busy, and a patient who has been either over-protected or ostracised will often "blossom out" when given a chance to study or work in a normal way with his or her fellows.

Educational Guidance

Among non-institutional patients without brain injury, intelligence ranges from "average"—or a little below—to the near genius level. A high intelligence should be capitalized on. A good education increases chances of employment and of self-respect.

Experience has shown that irregularities of brain waves, and also seizures, are less frequent when the mind is occupied. A student is too often taken out of school at the first sign of trouble under the plea that since this is a nervous disorder, a "rest of the nerves" is indicated. If the person is definitely under par physically or nervously, six or twelve months of freedom from school may be advantageous. If, on the other hand, his health is already good, school should be maintained with, if need be, a decrease in the school schedule or in the quality of work in order to provide more time for rest and recreation.

The cooperation of school authorities will be needed for carrying out this program. In public schools the help of teachers or superintendent is usually easily gained. In private schools cooperation is likely to be in inverse proportion to the expensiveness (and exclusive-ness) of the school. School authorities or parents of other pupils may object that a seizure in the classroom would be harmful to these other pupils. On the contrary, the "school of hard knocks" is an important one and the complete isolation of young people from unpleasant experiences contributes towards the neuroses of the adult. If seizures become too frequent or severe, the student must, of course, be withdrawn in good time so as not to prejudice a possible return.

With the patient of high school or college age, the problem of registration becomes more acute. Enlightened colleges or universities do not refuse the epileptic student if his attacks are not too frequent and severe, if he is receiving competent medical treatment, if the parents will release the school from all blame of accident, and if a satisfactory roommate can be provided. At college age, the natural tendency of seizures to decrease may come to the rescue. Of seventy epileptic students who entered the University of Michigan, one-half graduated, a record equal to that of all college students. The Student Health Service played an active part in helping the seizured students to meet their psychological problems. A follow-up study since graduation has shown that these students have done well.

Occupational Guidance

The obstacles which face a person who is subject to seizures must be coolly appraised. There is the usual commotion and fear which is created by a convulsion, especially if this occurs in a workroom of women. An even more substantial obstacle is the fact that the employer is liable for any injury which occurs to the patient while at work. Most employers, therefore, will not knowingly engage an epileptic, and a seizure "on the job" is oftentimes a cause for discharge. Provision in compensation laws should be made for an epileptic employee to work at his own risk or else industry and the consuming public should absorb any added costs due to employment of handicapped workers. The epileptic with frequent seizures now makes the round of positions until the possible jobs or his own courage is exhausted.

The limitations imposed by the seizures must be considered. Epileptics who have very frequent grand mal or psychomotor seizures at unpredictable hours are employable only in special workshops or in special situations. Three-fourths or more of adult epileptics are employable and will have less frequent seizures while working if the job is suited to the person and does not involve excessive fatigue or great emotional tension. There have been no reports based on actuarial experience indicating that epileptics have more accidents while at work than non-epileptics. As has already been stated, in about fifty per cent of the cases of grand mal, loss of consciousness is preceded by warning symptoms (aura) which may permit the patient to lie down or seek seclusion thus averting possible accidents.

Unsuitable Occupations

Looking at the problem from the viewpoint of the physician, jobs not suitable for epileptics may be placed in three classes.

First, are the occupations categorically forbidden because the lives of others may be endangered. These include the operation of fast-moving vehicles, airplanes, automobiles, locomotives, elevators, street cars, or buses; positions of intense responsibility, major surgery, private duty nursing, trapeze performer, solitary watchman or lookout, swimming instructor, etc.

Second, is the operation of machinery of such a nature or work at such a height that temporary loss of consciousness might injure the patient or the machine; these occupations include house painting, brick laying, carpentry, bridge building, steeple-jacking, electric light lineman, mining, welding, machine tool operation, etc. The use of safety appliances may, in cases, mitigate the danger.

For epileptics, as for healthy persons, the proportion of fatalities, due to accident which occur while the person is working, indicates the degree of danger in a given employment. Among industrial policy-holders of the Metropolitan Life Insurance Company only 24% of deaths due to accident occurred when the workman was "on the job." The proportion was lowest (1.8%) for clothing workers and rose progressively for waiters, shoe and cotton mill operators, store clerks, hotel servants, office assistants, automobile factory operators (the last 6%), farm and unskilled laborers (22%), mechanics (28%), chauffeurs (44%), structural iron workers (67%) and, highest on the list, electric light and power linemen (86%).

Third, are prohibitions which arise from popular reactions and prejudices. In this group, a controlling factor is the number of eyes focused on the person. The stage, the concert platform, or the pulpit is a more vulnerable position than a desk or a counter. Nevertheless, we have had as patients, ministers, college professors, public school teachers, legislators, and bankers. Positions which entail contact with the public are not inherently unsuitable, but their retention depends on the tolerance and intelligence of that particular segment of the public which may be looking on, and on the popularity of the patient. When persons who make up the public learn that, fundamentally, epileptics are not different from themselves, and that a seizure is nothing to be ashamed or afraid of, the number of positions open to epileptics will be many more. A person cannot be advised flatly against entering occupations in this third group, because treatment may prove to be successful, or public sentiment may be changed.

A study by Lennox and Cobb lists the occupations of some 1,100 adult patients.[5] *In spite* of the difficulties which epileptics encounter in securing a job, three-fourths of these epileptics were employed. Anxiety of patients to prove their worth makes most of them work unusually hard. Work performance of epileptics is increased and danger of accidents decreased if the employer is informed of the person's condition. Suitable job placement, and teaming with an employee who is himself a patient or who is not easily disturbed, has made it possible to employ considerable numbers of epileptics in manufacturing plants.

Occupations which carry less than average physical or social hazards are domestic service, stenography, clerical or library work, research, writing, music, drafting, painting, wood-carving and raising flowers or animals. Work on a farm or in the country is, of course, excellent for a short period or for the person who enjoys it.

Public Agencies

The attitude and decisions of public laws and officials are of increasing importance in matters of vocation. The armed services do not accept epileptics but curiously enough epilepsy was the second most frequent cause for medical discharge from the army in 1940. Need for the rehabilitation and employment of epileptic veterans emphasizes the necessity for inclusion of epileptics in any training or employment program. The United States Civil Service Commission does not reject the application of epileptics for sedentary desk positions, provided "the person is under medical supervision and the disease is well controlled."

This statement is in sharp contrast to the ignorance displayed in certain state laws. The law which governs the Bureau of Industrial Rehabilitation of New York State specifies that the bureau "is not for the epileptic or feeble-minded or any person who may not be susceptible of rehabilitation." It is to be hoped that the authorities who draw up and administer rules for veterans will have a better knowledge of epilepsy.

A constructive and helpful attitude has been adopted by the

United States Employment Service. The manual which this service has prepared for the use of the section dealing with handicapped individuals is a useful organ for popular education.

The problem of the brain injured epileptic is of a different order. In addition to seizures, which are harder to control than the seizure of genetic epilepsy, there may be impairment of muscle movement, or mental or personality defects. Persons who are most severely affected must be cared for in public colonies or hospitals where work is usually limited to helping in the institutional housekeeping or to occupational therapy.

Those non-institutional patients who can be only partially productive and who require close supervision, may find employment in special workshops. Here the type and volume of work is suited to the individual's capacity, he is under medical direction, and his earnings are commensurate with his output. A small example of such an effort is the Auracraft Shop in Cleveland, for epileptics only,[1] and the Community Shops in Boston for various types of handicapped persons including selected epileptics.

Servicemen who are fully incapacitated must be placed in veteran's hospitals or receive compensation for permanent disability. When they have only seizures, without other physical or mental disability, they should not be psychologically crippled by making their continued support contingent on their continued sickness. They should be treated as normal people and the effort of the Government concentrated on making a place for them in industry. Enlightened treatment of service men and women will open the way for proper treatment of civilian epileptics by the general public.[3]

Education of Public and Cooperation of Agencies

Some of the books which have been published in recent years can be of great benefit to the layman. A very popular presentation on the subject of epilepsy is one written by Dr. Tracy J. Putnam, "Convulsive Seizures, a Manual for Patients."[6] Another book, in which the lay person will find a concise statement of present day knowledge of the nature and treatment of seizures, is "Science and Seizures, New Light on Epilepsy and Migraine" by Dr. William G. Lennox.[2]

The American Epilepsy League, with offices at 50 State Street, Boston, Massachusetts, is an important agency for the education of the public. It is doing much to correct the many fears and to refute much of the misinformation, which has long gone unquestioned by the layman, and is actively cooperating with business and with local and governmental agencies in the placement of selected patients in industry. Membership in the League begins at one dollar a year and includes a copy of the book, "Science and Seizures." Further medical research and more effective education of the public should result in still better medical and social treatment of epileptics and broaden their vocational opportunities.

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W. G. L.

EVALUATION. Vocational Guidance might be evaluated as a broad social movement; in terms of the extent to which its functions are represented in a given agency; or in terms of its effects on the occupational adjustment of individuals who have been subjected to it.

In the first instance the measures of value are the increased numbers of educational institutions and social service agencies that have incorporated vocational guidance among their services during the last thirty-five years. In the second instance, the measures become the extensiveness and intensiveness with which the functions are carried out in a given agency.

With respect to evaluating the effects on the occupational adjustment of the individual, the undertaking is not so simple. Such evaluation must begin with the measurement of factors that exert influence on the individual's adjustment. Here the trouble begins. Vocational Guidance, as defined by the National Vocational Guidance Association, Inc., is a complex process. Involving as it does the physical, physiological, mental, moral, social, and economic aspects of the individual's vocational adjustment, the problem of evaluating is correspondingly complex. Scientific investigations have resulted in objective analysis of some of the aspects. But when investigators undertake to evaluate occupational adjustment en toto, they encounter patterns as varied as the differences represented among the individuals under study.

The literature pertaining to evaluation of vocational guidance is relatively limited. In 1932, Kitson and Stover prepared the first extensive annotated bibliography of such reports, including twenty-two reported through 1931. No report was included that did not indicate clearly that vocational guidance and counseling has been given to the subjects involved.[12]

A summary of similar reports, published between 1932 and 1937, was made by Kitson and Crane. Over this five year period, the compilers were able to include reports of only twenty investigations, some of them extremely brief, which met the criterion of measurement on subjects who had had the benefit of vocational guidance and counsel.[11]

Since 1937 there has been no compilation of reports along similar lines. There are reports in various scientific periodicals that might well be included in a bibliography similar to those listed above. Of particular interest are the continuing efforts of British investigators to evaluate the process as a whole.

Myers, in 1926, made the first recorded proposal for the evaluation of a program of guidance in a school system. The criteria suggested were as follows: (1) completeness, as measured by the number of activities carried on; (2) distribution of emphasis, as shown by the relative amount of time and attention devoted to each activity; (3) thoroughness, revealed by the quality of the service rendered; and (4) consistency of organization. He listed as indispensable activities the following: imparting occupational information, try-out courses, individual counseling, courses for training in certain occupations, placement, and supervision during employment. He sub-divided the activities into units, and allotted each of them a number of points to be used in establishing a final rating for the school system.[16]

In 1941, the Committee on Ethical Practices in Vocational Guidance Agencies of the National Vocational Guidance Association published a list of criteria against which to measure the activities of a vocational guidance agency. The criteria covered the following: Scope of the service, Study of the client, Records and Reports, Follow-up procedure, Cooperative service, Personnel of the agency, Promotion methods, and Financial practices.[1]

Appraising Guidance in Secondary Schools, the report of extensive investigation by Kefauver and Hand, included, among thirty-four factors examined, certain of the activities originally stated by

Myers as essential to a good program. These investigators, over a period of three years, compared the acquisitions made by pupils in secondary schools in twelve school systems which emphasized "guidance." Comparisons between pupils in the eighth and eleventh grades within the same system, indicated by scores made on a specially prepared test of vocational information, showed that eleventh grades pupils were superior with respect to the information measured by the test. The investigators pointed out however that natural attrition may have resulted in a more highly selected group in the eleventh grade. Similar comparisons were made with respect to other basic indices such as vocational plans formulated by pupils, I.Q. with relation to chosen occupation, "adjustment," and the like. Briefly, the investigation revealed information concerning the adequacy of the program per se; it made no attempts to evaluate the subsequent effects of vocational guidance on counselees after entering the occupational world. It shed light on the magnitude of the activities which constitute vocational guidance. The investigation covered the so-called "guidance" field . . . educational, health, recreational, social-civic.[9]

An investigation undertaken by the National Association of Secondary-School Principals revealed that students of occupational information show significantly better behavior in making their occupational adjustments than do those who have not completed such a course.[13]

While the first two areas of evaluation lend themselves to measurement either by mere counting or by comparing test scores by applying statistical formula, evaluation in terms of occupational adjustment involves a number of problems. The question to be answered is: To what extent did the vocational guidance, administered at some stage in the individual's development, affect his occupational adjustment? But what shall one use as an index of vocational success? In attempting to establish absolute values, one encounters the same difficulties as those met when trying to evaluate religion, love, character, education, or any other intangible factor.

Before attempting to answer the question, one must fully comprehend the functions of the vocational counselor who gives the vocational guidance to the individual. Mainly his task is to assist the individual to evolve a sound vocational plan. It is not telling the individual what to do, but aiding him in appraising himself—his interests, physical and mental capacities, social and economic circumstances—in the light of occupations—the conditions, requirements, and rewards. Because vocational guidance demands self-analysis in the light of occupational demands, it is natural to begin evaluation with ex-counselees who are working, and so far as possible elicit from them reports on the process as it had affected their occupational adjustments.

As was said above, in evaluating the service rendered to individuals the first step is to decide on a criterion that stands for occupational adjustment. One readily sees two phases namely, efficiency on the job and happiness or self-satisfaction. The latter presents difficulty with respect to objective measurement although an investigator might request subjects to indicate their satisfaction as some point on a linear scale of ten steps, or might construct a rating scale. On the other hand evaluation in this area would seek to elicit information concerning satisfaction with one's vocation in the light of the completeness of the specific occupational information made available and explained to him during the vocational guidance process. Here an investigator might uncover evidences of the "influencing" rather than "directing" counselor. For the former, efficiency on the job, what shall the criterion be—earnings, quantity of output, quality of output, length of time in the occupation, number of promotions, or ratings of employers? Any one selected would be an arbitrary choice, subject to variables of workers studied in geographic areas during economic cycles. A combination of them increases the number of variables—differences existing among the individuals and the endless ramification of variables in the complex occupational world.

Assuming, for the time being, that the aforementioned are logical and workable criteria, another question is posed: How many years, after the vocational guidance has been given, shall the investigator wait before attempting to evaluate its effectiveness? Allen suggests intervals of one, three, and five years after leaving secondary school.[4] This hardly provides adequately for evaluating vocational guidance administered to those students who have entered institutions of higher learning, or have taken graduate work in the professional fields. Probably the investigator should evaluate at similar intervals following graduation from such institutions.

Another difficulty confronting investigators is access to homogeneous groups of subjects, i.e. subjects that had passed through the hands of the same counselor. Variability among counselors is great and the errors in measurement would vary as widely as the procedures originally used by the various counselors. A sufficiently homogeneous group whose work might be evaluated would constitute counselors from the same institution. But there the trouble doesn't end. Investigators have always had difficulty in securing an adequate number of subjects for study after a period of years. Add to this the variety of occupations in which one would be trying to find a sufficient number of subjects against which to apply any selected criteria. For example, on first thought, all other problems having been resolved, one thinks that the commercial occupations such as typist and stenographer offer possibilities for securing relatively large groups for study. Would it be fair to combine those workers meeting competition in the general business and commercial world with those who have qualified for civil service and who profit by the conditions under which the latter group works? Finally, the expense involved in long term investigations is greater than most investigators can afford.

Despite the difficulty of the task, several attempts have been made to measure the outcomes of vocational guidance in terms of the occupational adjustments of individuals. The Intercommunal Bureau of Vocational Guidance, Brussels, Belgium, was able to follow-up, after six years, 391 of 607 counselees who had been advised when leaving elementary school, generally to enter apprenticeships. Ninety-eight per cent of those who had followed the advice were successful on the job while only nine per cent of those who entered an occupation, not advised, were successful. Of those advised neither positively nor negatively, fifty-seven per cent succeeded. The criteria used were the opinions of the investigator based on reports from the persons advised, from parents, and from employers.[7]

A similar study by the Industrial Fatigue Research Board in London included 100 children, approximately fourteen years of age. Before leaving the elementary school, they had been examined from the physical, physiological, social, and economic points of view and then had been advised regarding the occupations they should enter. Two years after advisement the investigators found that eighty per cent of those who followed the advice declared themselves satisfied with their work, prospects, and pay. Less than forty per cent who did not follow the advice reported satisfaction on the same points. Earnings of those who had entered the recommended occupations were slightly higher than that of those who did not follow recommendations. Forty-three per cent of those who followed the advice had changed jobs: of the other group, sixty-one per cent had held two or more jobs; twelve and one-half per cent had held four or five jobs. Those who followed the advice received promotions sooner than those who did not.[6]

Stott, in the Appraisal of Vocational Guidance, discusses the aims of vocational guidance and contrasts the statistical with the

the advantages of vocational guidance before entering the occupation and the control group having had no such advantage. A rating scale technique might yield significant information.

Much so-termed evaluation has been nothing more than computational work without taking into account any of the component services of vocational guidance—the number of graduates who enter college and per cent who complete college, the number who enter various occupations without any indication of the suitability for the individuals concerned, the number who make occupational choices related to the occupations of parents. Good information but no measure of the effectiveness of vocational guidance. During the manning-up of the military forces, it was customary to give a general orientation lecture about the "jobs" to be filled in the service. At one large training center, one of the leading questions was: How many are interested in jobs in aviation? Approximately seventy-five per cent of the hands would go up. Men were asked to drop hands at the point where they failed to meet a stated requirement. The requirements were stated, one by one, and hands dropped rapidly until, after the announcement of the final requirement, relatively few hands were observable. On the contrary, during personal interviews, it was sometimes difficult to convince recruits of the advantages of jobs for which they could easily qualify and in which they could render excellent service. Certainly investigators who attempt a "ten year after" study are going to find individuals in jobs unrelated to earlier expressed vocational choices and vocational planning because of new interests aroused and developed from war-time training and experience.

While each stage of the vocational guidance process may be evaluated separately, it does not follow that one can evaluate the process as a whole in terms of an individual's occupational adjustment. Even though the investigator has access to subjects who may have been given a broad orientation to occupational life, may have been given expert counsel, may have formulated and executed vocational plans fully, may have had the assistance of an expert placement officer in getting located in the chosen field, he may discover that individuals are in occupations quite unrelated to the ones for which they prepared themselves. This, per se, is not any negative reflection on the vocational guidance. During the intervening years, other forces may have been playing on any individual: technological changes may have occurred which compelled him to pursue another course; he may have explored other vocational possibilities; his interests may have changed; his economic status may have changed; who knows, he even may have married the boss's daughter. Within the framework of the known change, the investigator should determine whether the individual had followed the principles and techniques of solving occupational problems which he had learned while being given vocational guidance. The contribution of the vocational counselor, of course, can be gauged only by measuring the success with which the person guided consummated his vocational plan or plans.

When an investigator undertakes to evaluate vocational guidance, he must utilize that technique which he believes will elicit the information he is seeking. A combination of techniques usually produces more comprehensive information.

Because many reported studies have involved subjects not readily at hand, investigators have used the questionnaire. The difficulties in developing a fool-proof questionnaire are too well known to warrant discussion here. But a reliable questionnaire can produce much information for purposes of compilation and study. If it is bolstered by carefully controlled interviews, the investigator accumulates pertinent information which, when checked and cross-checked, permits deductions concerning the points under study. If, in addition, he has access to sources of objective data such as school records, he is in an enviable position and can draw sound conclusions concerning the success of certain services rendered in the vocational guidance process.

Some of the most enlightening information has been produced by the clinical approach to evaluation. Here the outcome is expressed entirely in terms of the individual. Viteles reported the results of one of the earliest efforts along this line.[18] All possible objective data are studied in the light of the particular individual, and his occupational adjustment is estimated in terms of his peculiar personality and circumstances. Under such conditions the economic factor may be considered relatively unimportant with respect to a subject from a family of means and his job adjustment is estimated in terms of his expressed satisfaction with what he is doing rather than in terms of earnings or any other socially defined criterion. On the other hand, an emotionally maladjusted or physically handicapped individual may be making adjustments to a series of jobs, any one of which affords him contentment with his occupation and its concomitants. Investigators utilizing the clinical approach defend its use by referring to the official definition which reads "assist the individual" and stating that they have drawn conclusions on that basis.

The vector theorem, applied to objective criteria such as earnings, number of promotions and the like, looms as a possible means of determining, within the planes involved, the overall influence of socially defined occupational success. Lurie cites evidence of success with data from the Thorndike study, Prediction of Vocational Success. It should be noted, however, that Thorndike's subjects had not received vocational guidance; that the data used were based on the factor "efficiency on the job in terms of measured output."[15] But investigators utilizing this technique would still find themselves facing the problem of reducing the intangibles to objective quantification.

The best type of evaluation is an effort to discover outcomes of vocational guidance in terms of the occupational adjustment of individuals. The process, being complicated, offers considerable difficulty in being evaluated as an entity although such attempts have been made. Emphasis has been placed on evaluating the tools utilized in the process. Little by little investigators are chipping off more information which furnishes answers to questions such as: How can we give more effective information about occupations? Wherein shall we modify our counseling procedures? While progress has been slow, and while mass evaluation presents endless problems, counselors are aware of the significant contributions which the process makes. The clinical approach, by means of careful case studies, has been yielding significant information. While a long involved process, it may be that more expertness along clinical lines will enable investigators to amass information which later, to some extent, can be reduced to quantitative terms. At present, however, those interested in measurement on a linear scale must content themselves with the knowledge that each scientifically planned investigation is pushing the objective toward its ultimate goal—a true evaluation of vocational guidance within the limits prescribed by individual differences and by the differences existing among the more than twenty thousand occupations with respect to conditions, requirements, and rewards. Selection of criteria against which to evaluate constitutes a major problem. Investigators might well concentrate on the considerations advanced by Williamson and Borodin.[20] Baffled by the difficulty of finding a criterion that meets individual as well as social concepts of occupational success, investigators are endeavoring to combine factors that lend themselves to quantification and are attempting to weight them in order to reach a closer approximation of some index of occupational success. But for years investigators have been trying to evaluate education, character and the like and as yet have reached no conclusions that are generally acceptable without reservations here and there. Therefore, investigators who attempt to evaluate vocational guidance, an established function approximately thirty-five years old, are not too discouraged with the results of their efforts. They realize that their work may ultimately be crowned with success when attempting to measure the outcomes of the process as a whole. Currently they are progressing slowly and are refining tools of measurement and applying them to steps in the process. But with the endless variables, evaluation of the effectiveness of vocational guidance offers a challenge to investigators who seek some means of quantifying subjective reactions, objective data, technological change, and economic cycles in some one term that represents VALUE.

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Historical Development

The problem of finding suitable categories has always been with us in the field of psychology, and a forerunner of factor analysis may be found in the work of Binet and his predecessors. As long as the early mental testers did not deal with suitable categories of behavior, their tests did not work in the practical situations for which the tests were made. Binet solved the problem when he did two things: first, he used tests in more than one category; second, he used tests of the higher mental functions (i.e., the right categories) rather than simple sensori-motor tests.

It was after Binet solved this problem that Spearman provided a rational basis for the early theoretical approach to such problems. According to his theory, each mental task involves general ability to some extent, and specific abilities required only by the particular task. He provided statistical techniques for the analysis of data, to test his theory. The techniques involved analysis of tables of correlation coefficients. The essential procedure was to test many abilities, compute all intercorrelations between pairs of measures, and conduct further analysis based upon the matrix of correlation coefficients. That is still, today, the pattern of procedure in factor analysis.

It is surprising how far Spearman penetrated into this interesting field of scientific endeavor. Prodded by Thomson and by Thorndike, Spearman was forced to admit the existence of many group factors of mental ability. Many faults of his early theories were pointed out by various critics. Spearman met these criticisms in various ways, in some instances by directing research which led to the improvement of his own theory. He showed, among other things, how one can derive relatively pure measures of a general factor, or of a group factor.

It remained for later workers to devise the more efficient modern methods of factor analysis. These can be appreciated in full detail only by persons trained in mathematics and statistics, especially in correlation analysis. The great contributions by Kelley, by Hotelling, and by Thurstone have been presented in well-known publications. Kelley's methods seem to follow naturally from a springboard of correlation analysis. Hotelling's brilliant technique follows naturally from combination of the methods of matrix algebra and the problems of modern psychology. Thurstone's methods, which are perhaps most powerful and most economical, arise naturally from application of engineers' methods to analytical problems in mental measurement.

At the present time, research in factor analysis is going forward on many fronts. Thomson, Holzinger, Burt, and others have devised methods of dealing with many of the special problems of factor analysis. Some of the methods are highly specific and suitable in particular situations; others are more general. This brief essay does not pretend to include even mention of all contributors. In the works included in the bibliography the student can find an orientation which serves as a basis for any more exhaustive study he may wish to pursue. All the workers in this field are concerned to some extent with the fundamental scientific problem of dealing with categories.

Technical Problems

An analogy may serve to clarify the problem, even though it may be inaccurate in some of its details or implications. Hence, let us imagine a sphere, somewhat like an ordinary classroom globe, but not concerned with the earth. On its surface we can place a map of human abilities. Our problem begins when we attempt to be realistic, for we must place near to each other those abilities which are similar, and far apart those abilities which are different. Following the geometry and trigonometry of correlation, we must separate uncorrelated abilities by ninety degrees. We soon find an ordinary globe inadequate, and we go on imaginatively with a hypersphere in imaginary space of more than three dimensions.

If the sphere is to rotate about a given axis, we may choose that first and most important axis by agreement. There is some reason for assuming that a measure of general intelligence, as proposed by Spearman and Holzinger, should be that first axis. Other axes would be determined by other measured abilities. These tend to fall in groups or clusters, like groups of islands on the earth. In between, there are many vast uncharted areas. The clusters can be located by factor analysis, and they furnish the axes sought after. However, they tend not to be at ninety degrees from one another.

From this fact, one of the major problems of factor analysis arises. Practical measures of human abilities, as now developed, tend to fall into clusters. The measures within a cluster do not intercorrelate perfectly; those in different clusters are not independent; that is, they do not show zero correlations one with another. This is the fact of an excess of inadequate and overlapping measures or categories. Kelley has pointed out the desirability, in the interests of efficiency, of dealing with a relatively small number of completely independent abilities. When such measures are developed, the first axis has practical meaning, and the later ones seem to lose their orientation to practical measured abilities.

Sometimes it appears desirable to rotate the axes discovered through a centroid factor analysis. The rotational procedures appear sometimes to give a better set of axes or categories, in the sense that the axes then appear less as abstractions and more in harmony with practical usage. In some instances, rotation appears unnecessary. The interest factors discovered by Thurstone in analysis of results from the Strong Vocational Interest Blank appeared meaningful. They were called interest in science, interest in language, interest in businesss, and interest in people. They account for all, or practically all of the measurement afforded by eighteen interest scales. These four factors were discovered before the techniques for rotation of the axes were developed.

Oblique Axes

One problem in factor analysis results from the conflict between statistical efficiency and practical need for simplicity. The latter seems often to lead to a desire for directly meaningful measures, meaningful in terms of current practices. But such tests or measures tend to be correlated, because they are based upon clusters of traits determined by custom and past experience. Hence they lead to oblique axes in some instances. Statistical efficiency, on the other hand, seems to call for the use of axes which are perpendicular to each other. Putting this problem into test terminology, we may say, for example, that statistical efficiency might lead one to desire to use tests of intelligence, and other tests which are completely independent of intelligence, when testing people to predict their efficiency in clerical and mechanical work. However, existing tests of intelligence, of mechanical ability, and of clerical ability, tend to be positively correlated. Extension of this situation to include many measures complicates the problem further. Insistence upon independent measures sometimes tends to result in tests or axes of measurement which are hard to interpret in terms of known vocational or other practical situations.

Studies of Limited Scope

Another difficulty arises because the results of a factor analysis are in part determined by the selection of tests, or of populations, or of occupations included in the factor analysis. The order in which the factors are extracted depends upon the context, or the matrix of tests. It varies somewhat with different groups of people studied. Hence the arrangement of coordinate axes, or test factors, is dependent upon the scope of the investigation. In no study can one hope to use all existing tests, and all types of populations. Small-scale studies, which are reasonably easy to conduct, may lead to mapping out of human abilities in a manner which does not fit in with the results of other similar studies. When one attempts to use a very large number of tests in one study, then one is tempted to make each test too brief to be reliable. Also, with large numbers of tests, the computations become laborious.

Fortunately, findings with considerable stability result from studies of reasonably limited scope. Also, there are limited areas of investigation which may be studied with the hope of finding results which are important within a given field of work. Some research has been conducted on problems of this type.

Frames of Reference

An ordinary set of tests furnishes a frame of reference for measurement in a given field. For example, one may measure candidates for clerical positions by means of tests of intelligence, of perceptual abilities, of ability in the fundamentals of arithmetic, of knowledge of office routine, and of skills in the use of office machines. One thus measures the candidates with respect to the several dimensions marked out by the test battery.

After a factor analysis one might measure candidates on tests X, Y, Z, and W. These tests might be regarded as different organizations of the components originally assembled in the ordinary tests. Very likely the first one would be recognizable as a test of intelligence, of the ordinary type well known to psychologists. Very likely the other tests would be less easily identified and named in relation to the tests originally included in the battery. However, it is likely that the new tests could be made briefer than the originals, and somewhat fewer in number. It is extremely doubtful whether they would be more useful in vocational guidance. They would furnish a new frame of reference, which workers would have to learn to use. However, if one started with thirty tests, used by workers in five or six practical fields of guidance, one might still end with four or five, useful in all those fields of guidance.

It is always possible that careful research may lead to a frame of reference which is more efficient than one already in use. For example, research on occupational interests by Strong and others seems to be leading to the development of group interest scales useful in mapping out whole fields of occupations. It appears likely that factor analysis can make significant contributions in development of technical measures for use in efficient classification within a broad and complicated field of abilities.

Possible Contributions

In addition to points mentioned above, one may note that factor analysis may lead to useful discoveries of several types. It can often suggest the nature of preliminary classificatory devices, through indication of clusters of abilities. It can indicate the number of different independent tests needed to provide the measurement previously afforded by an excessive number of correlated measures. It can lead to better planning through indication of the emphasis in testing inherent in the use of a particular battery of tests.

Present Status

At present, there are numerous divergent theories and techniques for use in factor analysis. Their existence has led to much desirable research activity. There is a common basis for agreement, in the search for suitable frames of reference, in the drive to secure efficiency of measurement, and in the desire to find a general rational plan for classification. Research in factor analysis tends to be technical and mathematical. For example, problems concerning techniques of rotation of axes, methods of reducing labor, methods of eliminating subjectivity, and methods of determining the number of factors are receiving attention. However, factor analysis has led to results more readily comprehended by the layman, for example, in the field of construction of new tests and other devices or techniques of appraisal, in physical education, in intelligence testing, and in vocational testing.

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H. D. C.

FARMING, APTITUDE FOR. Aptitude for a given occupation may be defined broadly as ability to develop proficiency in that occupation. A diagnosis of aptitude, which is essentially an inference based on an appraisal of an individual's present characteristics, is at the same time a prognosis of probable capacity for future performance. Thus, to state that a person has aptitude for farming is, in effect, to predict that he can become, relatively speaking, a successful farmer. "Aptitude," as here interpreted, has a complex connotation, for it implies not only the capacity to learn, but also appropriate interests, temperament traits, and physical attributes.

The difficulty of treating "aptitude for farming" coherently becomes apparent when it is recognized that "farmer" suggests a variety of jobs. While the occupational tasks of some farmers are of an unskilled and semi-skilled nature, the duties of others are practically the same as those of the business proprietor. This is clearly indicated in the definition given in Part I of the Dictionary of Occupational Titles: "FARMER (agric.). A general term applied to one who engages in the profitable exploitation of the soil to raise crops and animals, process them into salable form, and market them; the extent of his actual participation in the physical, supervisory, and administrative duties entailed depend (sic) largely on the size of the enterprise."

No attempt is made in this summary, except parenthetically, to differentiate between types of farm work with respect to the aptitudes required. What *is* presented is information, based on research and authoritative opinion, that may be helpful to counselors and others in their efforts to distinguish those who should be encouraged to enter the general field of farming from those who should be discouraged.

Abilities

There is some evidence that, of boys who become farmers, those who received higher grades in school tend to achieve a higher status in farming. But research data also indicate that individuals engaged in farming range in intelligence, as tested, from very high to very low. For example, a recent study of the scores on the Army General Classification Test of over 18,000 enlisted men, representing 74 different civilian occupations, revealed[2] that former farmers as a group displayed greater variability of scores (as shown by the standard deviation) than did the men from the 73 other occupations. In the same study, the group of men who gave "farmhand" as their civilian job was exceeded in variability only by "farmers" and by "cooks and bakers."

Subjective estimates regarding the mental capacities needed in farming are presented in the Minnesota Occupational Rating Scales,[3] which classify 430 different vocations according to *minimum* ability requirements as determined by the combined judgments of 20 vocational psychologists. Each occupation is rated A, B, C, or D with respect to 6 abilities. These letter ratings represent percentile ranges, as follows: A, 91–100%ile (97–100%ile in the case of musical and artistic talents); B, 76–90%ile (musical and artistic, 91–96%ile); C, 26–75%ile (musical and artistic, 26–90%ile; D, 1–25%ile. Following this plan of classification, "Farm laborer—unskilled" is rated as requiring D academic, mechanical, clerical, social, musical, and artistic abilities. "Farm tenant—on small tract of land": C in mechanical ability, and D in the other five. "Farmer-owner or manager of moderately sized tract of land": D in artistic and musical, and C in academic, mechanical, clerical, and social abilities.

The above ratings probably are not applicable to college-of-agriculture students, most of whom do not become farmers but enter related agricultural occupations requiring different ability patterns. Colleges of agriculture that make use of standardized tests as a part of their selection procedures have found that above-average academic ability and achievement in science at the time of admission are characteristics that augur later success.

The use of tests as an aid in determining fitness for farming has received very little attention in the literature of vocational guidance. Although no reliable and valid instruments are available for measuring farming ability *per se*, tests of academic, clerical, and mechanical abilities, for example, may supply supplementary information of some value in counseling with those who claim an interest in farming. The results of such tests, when wisely interpreted, may prove to be particularly useful in helping counselees to choose between the many types and levels of jobs in the general field of agriculture.

Most of the boys who become farmers come from farm homes.

Zeran,[6] therefore, rightly emphasizes the importance of inquiry, whenever possible, into an individual's performances in farm activities as a means of appraising his aptitude for that occupation. Thus, capacity may be inferred from a boy's demonstration of his ability: to recognize problems which exist on his father's farm; to operate and repair farm machinery; to complete successfully courses in vocational agriculture and related fields; to begin and finish farm projects; and to secure a fair monetary return from a supervised farming program while still in school. Evidence of this type probably provides a more reliable and valid basis for the prediction of success in farming than tests now available.

Interests

There is a paucity of a data on the measurement of interest in farming. The Strong Vocational Interest Blank for Men has a scoring key for "farmer," based upon 241 men, 75 per cent of whom are agricultural-college graduates having 5 years or more of subsequent experience in farming. Scott,[4] however, questions the value of employing the Strong inventory as an aid in counseling with the majority of rural boys, because: 1. It was standardized on adult subjects, most of whom are college graduates; 2. It contains few items directly connected with farming, and many items which may be beyond the understanding of the average farmer. There is need for research to determine whether these characteristics of the Strong Blank really do limit its applicability in the way that Scott believes they do. Admissions officers in colleges of agriculture, who work with a selected group, have found Strong's inventory useful in checking claimed interest in agriculture.

Scott attempted to devise a test of interest in farming that would not have the limitations which he ascribes to the Strong Vocational Interest Blank for Men. Although he succeeded in constructing an inventory on which individuals who were known to be interested in farming made an average score approximately 20 points higher than that of those not interested, he did not obtain a *statistically* significant difference between the scores of the two groups on the test as a whole. It is possible that, if he had continued his study, he could have obtained a significant critical ratio by refining his inventory, i.e., by omitting certain items, by correcting certain errors in his scoring key, and by weighting the items found to have statistically significant differentiating value. Some of the latter items are given here, because they may enable counselors to elicit "clues" regarding the presence or absence of genuine interest. Individuals known to be interested in farming tended to give *positive* answers to the following questions to a significantly greater extent than did those who were not interested:

Do you think that a farmer who has kept accurate records of his farm business is in a better position to manage his farm wisely than one who has not kept records?

Do you enjoy talking to people about agricultural problems?

Do you like to walk over fields to see how everything is growing?

Do you read books or magazine articles relative to better farm practice just for your own pleasure?

Do you feel that further training along agricultural lines would be worthwhile for you?

Do you object to eating in restaurants for any length of time?

Does the soft earth of a freshly plowed field give you a feeling of pleasure?

Do you like to watch livestock judged at a fair?

Do you feel that children growing up on a farm are usually happier and develop a better character than city children?

Are you confident that there is a good future for a better than average farmer?

Are you happiest when working?

Do you feel that agriculture is the most important single industry in the world?

Do you believe in the theory of crop control for farmers?

Do you enjoy driving over the country roads to study crop control and farming methods?

In the same group, there was a significant tendency to react *negatively* to these questions:

Do you feel that a city child has more advantages than a child who grows up in the country?

Would you prefer a more exciting life than that which you now lead?

Would you like to live in a large city?

Do you prefer to sleep late in spring and summer?

Do you look forward to a vacation?

Would you be satisfied working for someone by the week or month at a reasonable salary all the rest of your life?

If the weather were nice tomorrow, would you enjoy a game of golf?

Do you feel best when you are all dressed up?

Do you consider yourself among the healthiest fifty per cent?

Do you like to watch a storm?

As a means of appraising an individual's interest in farming as an occupation, the teacher or counselor should find out all he can about related interests. Among the "signs" which suggest an interest are these: persistence in completing a high-school course in vocational agriculture; the voluntary carrying-out of farm projects while in school; participation in extra-curricular activities related to farming; active membership in organizations outside the school that are open to farm youth (e.g., the Grange); and participation in hobbies and other leisure-time activities related to farming. No one "sign," of course, is in itself conclusive proof of a real desire to become a farmer.

Temperament Traits

A survey of the relevant literature indicates that traits such as the following are considered important aspects of aptitude for farming: industry, persistence, dependability, cooperativeness, ability to work without supervision, thriftiness, enthusiasm for farm life, and ability to adjust to the conditions of rural living. These traits can not be measured. Nor can a person be reliably rated with respect to them on the basis of an interview. A counselor who has had no opportunity to observe an individual over a period of time must rely upon records of past achievement and upon the judgments of others who have had extended contacts with the counselee.

Physical Attributes

Although the physically handicapped can and do succeed in some types of farming, the occupation in general is known to be one which requires good health and physical vigor. The extent to which an individual possesses these attributes may be estimated on the basis of information such as the following: interviews, attendance records, medical reports; and observation of participation in athletics, farm work, and other activities requiring physical exertion.

Conclusion

It should not be inferred from the foregoing discussion that at present the appraisal of aptitude actually determines who will and who will not enter farming. Wright's study [5] clearly shows the influential role played by home background and other socio-economic factors. Nor should the conclusion be drawn that aptitude is the sole determinant of degree of success. The kinds of farming opportunities available, and economic conditions in general, are of equal or greater importance.

But to state that factors other than aptitude play a major role in determining entrance into and degree of attainment in farming is not to say that appraisal of aptitude should not receive more attention than it now does. It has been estimated that: "The number of oncoming youth in farming families who will not be needed in agriculture will probably exceed 2 million during 1940–50."[6] This question of supply and demand suggests the need for a vocational guidance program which not only will encourage the best potential farmers to enter farming but also will provide counseling for those who are more likely to excel and find satisfaction in some other occupation. Follow-up studies, too, reveal the need for vocational guidance for vocational-agriculture students, only about half of whom become farmers.

It is easy to say that a counselor should encourage those who have good aptitude for farming to enter it, but to do this is difficult. In the first place, not enough is known about how to select the most promising. As Anderson[1] says: "In agricultural education there is need for more research before we can advance with assurance in educational planning. We need more predictive measures of a boy's vocational interests, aptitudes, and skills." In the second place, the economic status of farming in general is not such as to attract some of the best personnel. In spite of, or because of, these difficulties, the problem warrants vigorous attack. In 1940, persons working as farmers, tenants, managers and foremen, and farm hands comprised approximately 17 per cent of the entire labor force of the United States.

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A. G. N.

FILING, APTITUDE FOR. Filing, or the systematic care of records, is an important cog in all offices today, due to the fact that well organized records save executive time and energy in that information is furnished accurately and rapidly. The files also serve as a history of a company. The volume of records in the past few years has tripled. The information required of these records varies greatly in detail. Therefore people competent to handle the proper organization of such papers are more and more in demand.

The qualifications which have been found essential in a good file clerk are: a sense of orderliness, a liking for detail, an analytical type of mind in order to grasp the significance of a paper, the ability to read rapidly and a desire to give service. Accuracy is paramount. Coordination of fingers and eyes for speed, a good memory for having seen a given paper, a sense of humor in dealing with complaints, and loyalty to the firm in keeping to oneself information gleaned from the records are important characteristics.

In the more routine type of file work, a high school education, or even two years of high school, is sufficient. For a data and research type of file, which is akin to library work, a college education is demanded.

File supervisors must add to their qualifications those of a leader and a thorough acquaintance with the routines of the office.

Age is not important, although where much standing at the filing cabinets is required, the younger people are desirable, while supervisors are usually people of considerable maturity.

Men are used in special types of filing work, such as law offices and fire insurance companies, although the majority of people in this field of work are women.

Physically handicapped people can often be used in a file room, such as the hard of hearing where no service is required. In the research type of file physical disabilities which do not inhibit the mind will prove no handicap.

The duties of the beginning file clerk are classifying, sorting and filing forms, correspondence and cards, and pulling such material as needed, while senior file clerks are expected to read and mark incoming mail and after it is sorted to place it in its proper position in the filing cabinets, perform look-up work and make up reports. The file supervisor's duties include supervision of the above mentioned tasks, keeping statistics as to the monthly production of the department, assigning emergency work, and training new assistants.

Disadvantages: Where great volumes of like material are to be filed daily, the work is repetitive and apt to become monotonous.

physical standards in the United States will likely remain severe for some time. Other things being equal, a physically perfect pilot is preferred to one with one or more physical defects, however minor.

B. *Psychological Characteristics*

1. General Ability

Although research has shown only a low correlation between intelligence test scores and success in flying, available evidence suggests that the non-piloting aspects of a flyer's job call for an ability level at least equal to that of the average high school senior. Persons with less general ability can and have learned to fly but are usually unable to meet the professional demands required in the non-piloting duties involved in navigation, communication procedures, interpreting meterological reports, etc. Students of distinctly superior ability (those falling in the upper 5 to 10% of the high school population) should probably be discouraged from considering flying as a professional career. Although available evidence shows that they can succeed with ease, the intellectual aspects of this type of work are not sufficiently challenging for them to remain satisfied with it. Very able students with a strong interest in aviation should probably be encouraged to consider aeronautical engineering, airline operations or research in some field of aviation as alternative careers.

2. Mechanical Comprehension

Because modern commercial and military aircraft are extremely complicated machines, it is not surprising that both experience and research evidence have shown superior mechanical comprehension to be a desirable characteristic in the would-be pilot. Such comprehension is indicated by at least an average score on a test of mechanical comprehension such as the Bennett Mechanical Comprehension Test. The successful pilot need not have had experience in the actual use of tools or in the construction of mechanical devices, but it is essential that he have an appreciation of mechanical and physical principles and an understanding of how mechanical devices function.

3. Perceptual and Motor Skills

It is commonplace among both civilian and military flight instructors that one of the essential characteristics of anyone who would succeed in learning to fly is that he must have "good coordination." Research conducted during the war indicates that this much used phrase refers not only to muscular coordination but the ability to perceive situations and make the appropriate coordinated motor response to them. Certain of the military services have developed elaborate tests for measuring these perceptual and motor abilities but since such tests are not generally available for administration to high school and college students, probably the best means of evaluating this essential characteristic is to ask whether or not the student has participated in sports such as tennis, golf, diving, basketball, all of which call for considerable eye-hand coordination. This should not be interpreted to mean that only good athletes make good pilots. However, a student who has not participated in any of the above sports has probably avoided them because of a tendency towards "ham-handedness" and should not be encouraged to consider flying as a professional career.

4. An Intense and an Enduring Interest in Flying

No matter what other desirable characteristics a student may have, experience has shown that he will not succeed in flight training unless he is highly motivated to continue flying. The training program leading to the coveted pilot's certificate, while not as long as that required in other professions, is nevertheless a rigid one, and many students without a deep enthusiasm for flying are unwilling to undergo the more demanding phases of the training program. For this reason, students should be encouraged to consider flying as a career only if they have demonstrated a real and continuing interest in it over a period of years. Overt indications of such interests include having made model airplanes, read widely in the field, flown as a passenger, made repeated and extended trips to airports, taken private instruction, etc. Experience in the Civilian Pilot Training Program showed that many college students after beginning their course with reasonable enthusiasm would often fail to show up for their flying instruction if the weather was other than perfect or if the period assigned to them conflicted with a more attractive social engagement. Such persons almost inevitably refuse to accept the rigors of training necessary to develop the skills of precision flying demanded in professional aviation.

5. General Personality Characteristics

Research evidence in this area is unfortunately meager but such as is available justifies listing a few personality characteristics which seem to typify the successful professional pilot.

He should be a well adjusted person who is not given to worrying, brooding, or day-dreaming. He should not be a bookworm. His general attitude should be that of taking things in his stride and living in the immediate present. He should get along well with people but need not necessarily be extremely sociable.

Probably the most essential personality characteristic of the good pilot is the ability to remain calm under conditions of emotional stress. Normal routine flying makes no unusual demands on the pilot but emergencies such as the failure of a power plant or encountering unusually bad weather conditions, require that the pilot be able to function quickly and unerringly in situations which cause most persons to become tense, afraid or excited.

Other desirable characteristics of the professional pilot are discussed separately for commercial and military flying.

Additional Qualifications Needed for Commercial Flying

Two additional characteristics seem essential for success in commercial flying. The first is that the applicant be sufficiently mature and dependable to assume responsibility for the lives and property which he will be handling. This involves an essentially conservative attitude towards flying and a willingness to place safety of operations above all other considerations. As might be expected, this characteristic tends to be found more often in older pilots and is one of the reasons for the relatively long and arduous training and apprentice program typical of most airlines.

Oddly enough, the other essential characteristic needed by the continent or ocean spanning airline pilot is his ability to adjust to monotony, and yet remain continuously alert to the slightest deviation from routine flight. With the development of ever increasing array of automatic aids to piloting, the actual duties of the pilot are becoming even more routine. The new larger craft usually carry three pilots and several additional crew members: a flight engineer, a navigator, a radio operator and perhaps others. This results in the chief-pilot assuming greater responsibilities but at the same time his actual duties are less varied than before. More and more his rôle is becoming analogous to that of the Captain of a passenger steamer. Also it must not be forgotten that the newer and faster planes fly at relative high altitudes, with the result that the major portion of a several hour trip is likely to be made out of sight of land; hence the actual flight may be but little more interesting than a simulated flight of the same length in a Link Trainer on the ground. The student who is not able to adapt to other types of routine activity should weight carefully this aspect of commercial flying before deciding to embark on it as a career.

There are other opportunities in commercial flying which are somewhat less demanding than airline piloting. Thus—passenger hopping, crop dusting, some types of charter flying, and flight instruction all represent types of flying which may be engaged in by anyone who can obtain a commercial pilots license. It appears likely that the development of the helicopter may make for a practical system of "air-taxis" which will offer additional employment opportunities to commercial pilots unable to meet the qualifications required of airline pilots.

Additional Qualifications Needed by the Military Pilot

The standards required for the military pilot are in general somewhat more rigid with respect to both physical and psychological qualifications than is the case for the airline pilot. Specific qualifications change from time to time and should be checked with the nearest Army Air Force or Navy Cadet Selection Board. In general to be eligible for military flight training the applicant must be under 27 years of age, a citizen of the United States, be unmarried and agree to remain unmarried for a specific number of years, have met certain minimum educational qualifications and make passing scores on a series of pilot selection tests. Before the war the minimum educational requirement was the successful completion of two years of college. During the war this educational minimum was lowered to a standing in the upper half of the high school graduation class but will likely return to at least two years of college.

A student should give serious consideration to becoming a military pilot only if he likes military life and is willing to undergo the rigid training and discipline which it involves. It must not be forgotten that the military pilot is first an officer and only secondarily a pilot. He is first selected and trained as an officer and then given additional training in the specialty of flying. From this it follows that one should not consider military flying as a career unless he has the necessary qualifications and interests to become a good military officer. With the passage of time and his promotion to higher rank he will find himself flying less and less and spending born in general as is evidenced by the fact that many refugees have made quite excellent economic adjustment and, indeed, have not inconsiderably enriched American life and contributed to American industry. In so far as those aided by the National Refugee Service are representative of the foreign born group as a whole, it may be indicated that their limitations and handicaps make their economic and occupational adjustment difficult and makes their need for guidance all the more pressing.

With the above as at least a partial picture of the foreign born client who is in need of guidance, it is possible to indicate specific problems and factors to consider in making advisement available to this group.

The fact that the foreign born applicant for guidance may speak English inadequately constitutes an immediate obstacle to unhampered communication between counselor and client and, therefore, to the establishment of adequate counselor-client relationships. While through translation of documents such as school and work records, or through the use of an interpreter, gross facts of the client's history may be established, it will readily be seen that in such a situation the sensitiveness of the trained and experienced counselor to the client's reactions will necessarily be diminished. It follows from this that a guidance program for the foreign born should require that its counselors speak the language of the applicants.

While the problem of communication may be met as indicated, the language difficulties of the foreign born present a more difficult problem with respect to comprehensive investigation of his personality. The extensive and systematic use of objective tests is now commonly accepted practice in vocational guidance. It will readily be seen, however, that the language barrier is such as to make difficult the use of those instruments which are weighted with language factors. In the field of intelligence and in determining special aptitudes it may be feasible to use a number of accepted performance type tests. In the areas of achievement, interest, and personality, such an approach is not generally possible. In those instances in which performance type tests are used, standardized directions may have to be translated and this in part at least may invalidate the results obtained. American translation of certain intelligence tests into foreign languages has been in progress in one institution and may be found useful.

The practice of extensive testing has been accompanied by an emphasis on valid interpretation of test results; modern clinical practice regarding the evidence secured from the use of tests as data not to be regarded in absolute terms but rather to be interpreted in the light of all other evidence about the person. This would seem to bear special emphasis in using objective tests with the foreign born. Even where the foreign born client has reasonable familiarity with the language, he is likely to lack knowledge of idiom and appreciation of cultural background, aspects of which are reflected in the items included in American objective tests.

The situation with regard to the use of objective tests in guiding the foreign born should not, of course, be regarded as static. New developments may indicate much wider use of such instruments and research may develop the possibility of using psychological tests developed abroad, now impractical because of lack of applicability of norms, for the foreign born in America.

It is evident from the above that most of the data that the counselor will require concerning the abilities, interests, capacities, limitations, strengths and weaknesses of the applicant, will have to be derived through the use of interview techniques. The significant experiences of the applicant, moreover, will require translation into American equivalents so as to enable the counselor to indicate American occupational possibilities which are related to those experiences.

The language handicap of the foreign born results in difficulty also when it is necessary to present information about occupations. In the normal process of counseling, the applicant for vocational guidance receives a certain amount of occupational information through discussion with the counselor, but is frequently referred to literature, films, etc., as a step in occupational orientation. The possibility of digesting and translating occupational literature suggests itself and has been successfully accomplished. The extent to which this can be accomplished in any one guidance program, however, is limited and, therefore, the task of the counselor is greatly increased in this area also.

Perhaps one of the most useful tools available in counseling the foreign born is Part IV of the Dictionary of Occupational Titles—Entry Occupational Classification. To the extent that hobbies, leisure time activities, personal traits, casual work experience, etc., cut across national and cultural boundaries, this volume furnishes valid suggestive lists of occupations that are related to the above categories of activities.

The economic problem faced by many of the foreign born presents another factor which affects the guidance situation. The guidance process itself must be brief and intensive and suited to the ability of the applicant to keep appointments. Very much more important, however, is the fact that the guidance plan must take into account the economic situation of the applicant. While long range plans involving preparation over a considerable period of time may be in order, it is necessary to make such planning consonant with a number of goals which are capable of being achieved at various stages in the more immediate future. Occupational goals which involve short term training would seem to be in order. Techniques may be followed which call for immediate employment with training to be taken in evening hours; part-time employment and training combined, etc.

Faced with the need for playing a much more active rôle than is usual in guidance, the counselor must be conscious of the danger of becoming directive and authoritarian. Where this tendency exists it may be reinforced by the insecurity of the foreign born applicant who may tend to assign to the counselor a wisdom the counselor cannot possess as well as the responsibility for decisions that only the applicant himself should make.

The problems to be taken into account in rendering guidance service to the foreign born may present a discouraging picture. It is fair to indicate that a considerable amount of work has been already done and that follow up of the results of guidance have indicated the validity of at least some aspects of the guidance process.

In making vocational guidance available to the foreign born, organizations like the National Refugee Service and the vocational services affiliated with the Jewish Occupational Council have found that many of the foreign born while handicapped in the guidance situation manifest certain characteristics which to some extent balance their limitations. These organizations have evolved techniques which if not new, at least were not before so widely applied.

Among the characteristics referred to as manifested by the foreign born are considerable drive, energy, and ambition, good to high intelligence, and acceptance of the need of down grading in occupations where this is necessary.

The special approaches established by the above mentioned organizations contributed in no small measure to the adjustment of the foreign born. While experience in war industry has quite clearly pointed to the invalidity of the common axiom of the "depression thirties" that men and women over 40 and 50 years of age were on the industrial scrap heap, it may be indicated that organizations aiding the foreign born had, preceding the war, established the fact that men and women in this age group could successfully receive guidance and enter new occupations. Anticipating the war training programs in another respect, experience with the foreign born indicated that such men and women were capable of holding jobs after short-term training only. Perhaps most important is the integration of vocational training so that after occupational choice is made, the applicant was assured the training leading to the occupation selected. This may be contrasted with the procedure in vocational guidance in which the financial ability of the person receiving guidance determines in the final analysis whether or not he may follow the most desired plan.

The integration of guidance with vocational training is an area requiring special consideration but it may be indicated that in one large agency dealing with the large group of foreign born known as the refugees, this resulted in the ability to set up training courses which reflected the then locally current labor shortages. Among the courses so set up were upholstery, baking, restaurant cooking, machine shop, auto body and fender work, dental mechanics, American methods of architecture (for European architects), furniture finishing, millinery, income tax practice, and others.

Information on the above courses and others and on the guidance procedures followed in the counseling of the foreign born should be available through the organization referred to above.

The possible lifting of immigration laws by the United States in the decade following the war, and the mass migration of peoples from one country to another and from one continent to another may see the development of guidance techniques which are not as closely related to language as are our present techniques. While appraisal of personality in vocational guidance assumes pertinence in relation to the specific demands of occupations, methods and procedures may be evolved which may be less subject to the influences of culture patterns than are present techniques. The experience gained thus far in the vocational guidance of the foreign born may properly be viewed as a beginning in what may perforce have to be a major area of work in adjustment.

J. S.

FOREIGN STUDENTS. Thousands of foreign students are enrolled each year in American colleges and universities and other thousands are engaged in practical training with American commercial and industrial organizations or state and national government agencies. A large percentage of these students is selected by their own governments and is being prepared for positions of leadership in the homelands. (In China alone forty percent of the higher officials of that government in 1943 was American-educated, according to ex-Ambassador to China, Clarence E. Gauss.)

It may be inferred from the foregoing that foreign students have, for the most part, selected their fields of study before they arrive in America for academic or practical training. Again in China, present regulations specifically prohibit any student, self-supporting or sponsored, from going abroad until the student has graduated from accredited Chinese institutions and has two years of service in his specialized field. It is implied that students should be thoroughly grounded in their own culture before being exposed to another, and that they should know the needs in their own fields before seeking solutions, both logical considerations. The general trend of foreign students is toward graduate study abroad rather than undergraduate, although there are, and will continue to be, many foreign students in American institutions studying at the undergraduate level.

Because the foreign student is usually directed from home as to his field of study, little should be done to encourage a change of course unless such advice is requested. The consideration should, instead, be, is this practical?—does this meet the specific needs? There is an inclination to adopt the American ways in entirety. The graduate student of Architecture from Asia may possibly go home to design and build economically absurd buildings of composition and plastics, spurning the ceramic materials on which he is building. His major professor should continually question applicability of principles, counselling with an authority on the area to which the knowledge is to be applied.

Because of the predominance of selected students among the foreign group, vocational guidance *per se* is of less importance to us than is orientation to American life and adjustment to American university life and purpose.

Differences in social, political and psychological background, and in language account for the needed adjustment which a foreign student must experience before he is fully prepared to carry on his studies in an American institution.

Among other dissimilarities, Americans have a background of freedom in thought and action which is puzzling to the overseas student. He may be shocked by constant criticism, not realizing that this government and our other basic American institutions are built on criticism, and that the basis of our social, political, scientific and academic progress is in our constant search for the truth. He is surprised by apparent lack of respect for persons and traditions in the direct approach to studies and problems alike. In these respects, Americans have much to teach.

On the other hand, many foreign students find that Americans and American laws are most narrow in matters pertaining to sex. Students from the other Americas and from Europe frequently find themselves in difficulties because of Draconian state laws unknown in most other countries. It behooves all foreign student counsellors to give frank advice to overseas students as to personal conduct while visitors in this country.

To accomplish these and other adjustments, American colleges and universities are giving increasing attention to the welfare of their overseas students. Nearly every institution with an appreciable number of foreign students has employed a foreign student counsellor, whose duty it is to see that these students have as pleasant and as profitable a sojourn in this country as is possible. He handles problems pertaining to visas, Selective Service, Immigration, the State Department, the Treasury Department; he is the liaison agent between the university and other agencies, making sure that each foreign student has an American roommate if practical and desirable, that the student meets other Americans, is acquainted with the scientific or professional societies in his field of study, is privileged to observe and understand democratic and social institutions of American life. The foreign student counsellor is more effective when he has no disciplinary office, particularly when he is not a dean; he has his greatest success when the foreign students feel neither pampered nor neglected.

Frequently, the counsellor has a committee, chosen either representing each college of the university or representing the different geographic areas of the world. Those committees chosen because the members have had residence abroad and possess understanding of a particular culture are usually more successful, when results are considered from the pleasant and profitable sojourn point of view. Problems related to ecological differences are frequently more fundamental and disturbing than problems related to studies.

At a few American institutions of higher learning, an annual lecture is given to new arrivals on the subject "American customs and manners."

The International House is sometimes considered to be the logical answer to many foreign student problems. The three established in New York, Chicago and Berkeley by Rockefeller funds were answers to situations in three large cities where there were no dormitories available, where American families had few if any spare rooms, and where race prejudice made lodgings a problem for many. The college without these problems and with dormitories and available rooms with private families usually find an international house a distinct liability, since it is expensive to run and segregates the foreign students from American dormitory or family life.

When numbers of a single language group become too large in any one area, fluency in English usually deteriorates and a general lowering of academic grades becomes apparent. If the home country is involved in political upheaval or in the spread of ideologies, as in the recent case of Nazis, the difficulties or activities are magnified in that national student group to ill effect on academic activities. It seems wiser to limit the size of each language group in any geographic locale, and to provide the foreign student with an American roommate wherever advisable and possible. These practices will tend to spread students more evenly among American colleges and universities and avoid crowding the facilities of a few whose reputations abroad have already been established, sometimes to the point of absurdity.

As the number of foreign students in America grows larger, greater consideration is being given to their needs by private and public organizations. The Department of State is using its consular and cultural facilities to advise the student before he leaves his country as to appropriate university departments for the courses desired. The Department's many cultural institutes abroad seek by means of English lessons and selection committees to weed out those applicants who are obviously not prepared to conduct their studies in an American college or university, and to recommend for fellowships qualified students who could not otherwise study here. Uniform application blanks have been made available at many of our consular offices abroad to facilitate entrance to American colleges, universities and technical schools.

In order to obtain a visa, the prospective student must present to the American consul: (1) his application for visa; (2) certificate of acceptance from an approved educational institution in America; (3) certificate of good health from a recognized physician; (4) satisfactory evidence of adequate financial support covering travel and the proposed duration of stay in the United States. Colleges and universities can help to make these requirements effective (1) by accepting only those students for whom the institution can offer the most applicable courses of study; (2) by refusing entrance to new arrivals who have already been accepted elsewhere, unless the student holds written release from that institution for which he was originally destined; and (3) by requiring all foreign students to maintain, at their own expense, casualty and health insurance which also provides for possible tuberculosis hospitalization and which will prevent the student from becoming a public charge and subject to deportation.

Some American ports of entry, through chambers of commerce or other interested agencies, are establishing reception centers to receive and direct newly arrived students and leaders, thus avoiding bad first impressions brought about by local race prejudice, lack of hotel accommodations, or incompetent, inadequate advice and assistance. Educational organizations and chambers of commerce are systematically attempting to eliminate race prejudice, which is frequently a boomerang to our international relations, and found chiefly in apartment houses, hotels, lodgings, barber shops, and restaurants.

The universities themselves, in addition to sponsoring counselling and guidance systems, are altering some curricular requirements for the doctorate, so as to establish a flexibility which will more nearly meet the needs of the individual student. Language requirements are usually changed so as to use the student's own language, or English, or that language which is most useful in his research. Scientific and professional societies are welcoming foreign student members in order to ensure international scientific and professional friendship and development, a valuable contact which the local foreign student counsellor can arrange.

A large part of the orientation of foreign students is the effective teaching of English as a medium for study. It is obvious that the student from abroad has little immediate need for Chaucer and Shakespeare, and it is equally obvious that much harm can be done by assigning the student to a class for backward American students. The Department of State in its many cultural institutes abroad, Amtorg for Russian students, the Army for prisoners, the Navy, the American Council of Learned Societies, and at least twenty-five colleges and universities have been developing curricula for the rapid and effective teaching of English as a foreign language. One general conclusion of these agencies is that the entire language orientation period can be shortened materially if the foreign student has an American roommate during his period of intensive study. Language fluency and familiarity with American thinking habits, presentation of ideas, life and customs develop almost twice as rapidly as compared with the student who resides with a fellow national.

The presence of a foreign student on an American campus should be a two-way exchange of culture. He represents a nation of which he is proud, and he should be given every opportunity to inform Americans. A few American newspapers publish pictures of foreign students, telling who they are and why they are here. While it is advisable for the student to speak publicly as much as he desires, too many demands on his time interfere with his study. The foreign student counsellor may arrange for worthwhile speaking engagements and avoid others.

From an aspect of national interest, the most important phase of orientation and education for the foreign student is the understanding of American life which may be imparted during his stay in this country, a phase that is almost entirely neglected at present due to our proclivity for teaching technology alone. Even for American students there is far too little attempt to inculcate American traditions, institutions and culture. Reference to the activities of Japanese-returned students will show the danger of teaching technology alone.

Teaching these intangibles by means of lectures appears to be undesirable; many students come to the United States with a complex of national pride, and lectures on democracy are often adjudged as propaganda. Observation is usually far more useful as a means of education on democracy.

It is first necessary for the university to recognize the importance of knowing the American way of life, and then to provide specific time from regular classes for scheduled observation periods. The foreign student counsellor may plan one or two inspection trips a month, with attention to the organization and activities of election systems, city, state and national; courts of justice, free clinics and hospitals; schools and libraries; fire and police departments; departments of sanitation; agricultural extension agencies or services; newspaper offices that may exist in the area. To avoid later disillusionment, it is usually preferable to show the imperfections with the more desirable aspects in each study. Rotary International and other civic and social organizations are often interested and active in providing means for this phase of a broad education. The value of understanding the institutions mentioned is not that they may be copied, but that these future leaders may understand the American way of life by a comprehension of the principles on which it is founded. In all attempts to give this understanding, it is of some importance that the students learn, wherever possible, by participation—as dummy tellers in an election, for instance. It is possible that American schools and colleges may some day seek to protect our way of life by requiring this study of American students, but in the meantime it will be conducive to world peace if future leaders of other nations understand American principles of life and government.

W. H. D.

FORESTRY, APTITUDE FOR. A brief explanation of the value of forests and a description of the training of a forester are necessary to an understanding of the aptitudes and qualifications needed for a successful career.

America's forests comprise 630 million acres, or nearly 40 per cent of the land area of the continental United States. They constitute a renewable natural resource of the highest economic and social importance.

Forestry is the scientific management of forests for the continuous production of goods and services. The goods produced may be sawlogs and lumber, pulpwood for paper, naval stores, and chemicals, poles, piling, railroad ties, and other products including forage and browse for livestock and wildlife. The services may consist of scenic and recreational values, protection against floods and soil erosion, conservation of watersheds and water supplies, and preservation of wildlife environments.

The foundations of forestry are biology, engineering, and economics. To become a professional forester requires technical education and training.

Although technical education in forestry has been given in Europe for more than a century, forestry instruction of professional calibre was not available in America until 1898. Some of the earliest American foresters had to obtain their training in Europe.

The first American degree in forestry was conferred in 1900. In less than fifty years the number of professionally trained foresters in the United States has risen from zero to more than 12,000.

The major technical subjects which comprise the core of a forestry education are forest protection, forest management, silviculture, forest economics, forest policy and administration, forest utilization, forest engineering, and wood technology. In addition, courses are given in forest mensuration, forest regulation, forest products, forest recreation, forest soils, forest laws, history of forestry, forest entomology, forest pathology, botany, and forest zoology.

To obtain a professional forestry education requires (1) either a minimum of four years in college, of which at least two years are devoted to the technical phases of forestry; (2) or a minimum of two years of instruction at a graduate school of forestry following completion of an undergraduate course in arts or science.

The undergraduate degree is Bachelor of Science in Forestry; the graduate degree is Master of Forestry. In the United States 28 colleges and universities offer technical courses in forestry; most of these institutions provide courses at the professional level.

Short courses of one or two years are offered by certain institutions to train men for work as rangers or for subordinate positions in connection with lumbering and similar forest operations. Such sub-professional or vocational courses do not provide a degree, and those who complete them are not considered as having received full technical training. A highschool education is usually a prerequisite to admission to a subprofessional school of forestry.

In addition to the straight forestry program, several of the professional schools offer special courses in range management, wildlife management, logging engineering, landscape engineering, forest recreation, wood chemistry, pulp and paper manufacture, and other fields having to do with the utilization of forest products.

Qualifications for a Career

Certain qualifications are of the utmost importance for a successful career in forestry. High mental, physical, and moral standards are essential, not only for completion of the course of study, but for obtaining employment whether in public or private forestry work.

An ingrained liking for the out of doors and for living, growing things is another essential, but it is not in itself an adequate substitute for scholastic ability. Teachers and student counsellors often err in suggesting that high school graduates study forestry who are deficient in scholarship but who like sports or the outdoors. Most schools of forestry prefer to select freshmen students from the upper three-fifths of their highschool graduating class.

The outdoor type of man makes the best forester. But the enjoyment of outdoor recreation, such as camping, hunting, skiing, and hiking, as an occasional vacation is no certain indication that a man will find satisfaction in making his living by working in the woods month in and month out, in good weather and bad.

Forestry is definitely not an easy college course. Considerable field work as well as classroom study is required. Opportunities to excel in competitive athletics are not favorable, for forestry is likely to occupy most of the student's time. For the serious student, forestry will be more important than varsity athletics or a campus social life.

Young men in poor health or with physical handicaps are sometimes wrongly advised to seek careers in forestry because it provides healthful work in the open. Although a forester spends most of his working hours outdoors, he is frequently exposed to extremes of heat and cold. Often his work requires that he spend long periods in wet and stormy weather, in deep snow at low temperatures, in hot, humid swamps, or in steep and rocky mountainous country, all of which demand exceptional resources of physical strength and endurance. For example, fighting forest fires, a duty which most foresters perform as a regular and frequent part of the work, is a strenuous and often hazardous job, requiring hard physical labor.

Satisfactory psychological adjustment is another important qualification, as is the possession of qualities of independence and self reliance. Occasionally, when a forester is given lonely assignments in remote back country necessitating his temporary separation from human companionship, he must have the spiritual fortitude to endure such periods. However, forestry is also a gregarious profession, and the person who is antisocial or who prefers solitude as a way of life will be a misfit in it.

As in most other professions, men have the most successful careers in forestry who are normal physically, alert mentally, honest, dependable, and hardworking, friendly in personality, cooperative, neat in appearance, and well adjusted with respect to their family, social, and economic environment.

Those men are happiest in forestry who get satisfaction out of service as well as out of salary. It is not a highly paid profession. The practicing forester may expect to attain economic security and a comfortable living, but not wealth.

Most foresters, except those engaged in research or teaching, are essentially land managers, who apply scientific knowledge to the management of wooded areas. The harvesting and sale of forest products, whether sawlogs, pulpwood, naval stores, or other products, is part of their jobs. Consequently, business ability as well as scientific ability is important.

Even junior foresters are required early in their careers to supervise and direct the work of others. Executive ability, or the aptitude to acquire it, is always a valuable and usually an essential quality, particularly for those in administrative positions. A forester in charge of a national, State, or privately owned forest may have several hundred employees under his supervision during the field season, and during emergency fire periods he may be called upon to administer the work of many more.

Forestry is almost exclusively a career for men. A few women have obtained degrees, but have seldom successfully engaged in field work because of the strenuous physical demands. Research work at the Federal forest experiment stations may eventually provide careers for women professionally trained in forestry. Women are eligible to take Civil Service examinations for forestry positions in the Federal government.

Gifford Pinchot, the first American to become a professional forester, once summed up the advantages and disadvantages of a forestry career as follows:

"To the men whom it really suits, forestry offers a career more attractive, it may be said in all fairness, than any other career whatsoever. I doubt if any other profession can show a membership so uniformly and enthusiastically in love with the work. The men who have taken it up, practiced it, and left it for other work are few. But to the man not fully adapted for it, forestry must be punishment, pure and simple. Those who have begun the study of forestry, and then have learned that it was not for them, have doubtless been more in number than those who have followed it through.

"I urge no man to make forestry his profession, but rather to keep away from it if he can. In forestry a man is either altogether at home or very much out of place. Unless he has a compelling love for the forester's life and the forester's work, let him keep out of it."

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H. C.

FRANCE. The techniques of vocational guidance are refinements upon the traditional practice of education. Like all other, more sensitive manifestations of civilization, they are first to vanish under the impact of crude physical force—the inhumanity of man to man. As in every other war-torn country, the schools of France have been closed or have carried on irregularly, often in inconvenient premises, with makeshift equipment and a reduced or unskilled personnel, that is, in an atmosphere far from being favorable to fruitful regular work. In the struggle for stark existence, consideration of the occupational future of individuals must seem a hollow mockery. So, vocational guidance shrinks back from the foreground to make room for immediate pressing preoccupations of material living. Primum vivere.

This article is an account of activities conducted immediately prior to World War II, and is to be a hesitant prognosis of things to come. Considering the even greater need for rehabilitation, it can be safely assumed that the essential nature of vocational guidance will again be felt and that the impetus gained before World War II will make the program more effective than ever.

The background of Post-War II is strikingly similar to that of Post-War I except it is fervently hoped, that international cooperation will supplant the spirit of autarchy that accompanied the breakdown of the League of Nations. Only in a prosperous economy can vocational guidance function effectively.

Four features of French economy are noteworthy: small scale ownership of industry and land, importation of workers, state aid for children, and quality production, especially for the tourist trade. France has always presented a fine example of balanced economy, and where there has been lack of balance, the scales have hung in a direction opposite to that in other countries. She has large scale industries but they are balanced by small scale industries. She has much industry but almost just as much agriculture. And in both industry and agriculture the small scale feature is largely associated with small scale ownership. Small scale ownership implies family operation, family operation carries with it vocational predestination. It is not all quite as neat as this, but the fact must be faced that with such strong economic and social forces acting in one direction, all the science and the art of the counselor may be powerless to pull in the other direction.

After World War I, balanced economy, low birth rate, war casualties, all combined to produce in France a shortage of workers in both agriculture and industry, until well on into 1930 when the world-wide depression began to be felt. It was necessary to recruit, persistently and systematically, foreign workers. It is probable that this condition will exist after World War II, and it is possible that the principal sources will be Germans impressed into service rather than Belgians, Poles, Spaniards, and Italians, as was previously the case.

Perhaps the most interesting experiment in the social economy of France has been the establishment of family allowances. From time to time prominent place in the discussions of the day has been taken by the theory that the worker should not only be rewarded for the time, energy, and skill put into his work, but should at the same time be allotted support proportional to the number of family obligations he has taken unto himself. The French have put this theory into practice, not in its entirety, but as a supplement to the usual system of wage paying.

Two phases of French occupations have conditioned and colored vocational adjustments. French industry has depended very greatly upon the fine quality and artistic finish of the products which it has sent out to other countries. Fashionable clothing was for many years synonymous with Paris. The desire of other countries to become self-sufficient has made deep inroad into this market. The diminished buying power of individuals in all countries affected luxury goods first of all and the French suffered from that retrenchment. French goods which foreigners did not buy in their own countries they bought when they visited France. Transportation, services, and goods were purchased in great abundance. Thousands and thousands of French men and women were engaged, directly or indirectly, in catering to their needs. When the tourists stayed at home the work stopped. All of which meant first unemployment, then readjustment, because the withdrawal of five hundred to six hundred million dollars, the French estimate of the amount spent by foreigners during the best years, 1927–1930, meant an enormous loss in wages for a great many people.

Generally speaking, it may be said that occupational adjustment begins for the trade and commercial group at the end of the elementary school period (about fourteen years of age), for the higher positions in trade and commerce at the end of the higher elementary school period (about sixteen years of age), and for the professions at the end of the secondary school period (about eighteen years of age). Vocational guidance is not a function of the public schools. It is provided, rather, by other agencies that cooperate with the schools. National recognition was first given to vocational guidance in the Decree of September 26, 1922, which anticipated the organization of vocational guidance offices in cooperation with public placement offices so that the task of the latter might have a more rational basis, especially with reference to adolescents. It was proposed that these offices be organized to collaborate also with the elementary school teachers who would supply information on the intellectual and moral characteristics of the pupils, with physicians who would provide data on physique, and with the placement office which would be responsible for information regarding occupational opportunities especially with reference to the interests, aptitudes, and capacities of the children. The result has been that there are now several strong agencies operating in the field.

National Placement Offices have been organized under the Board of Trade. Institutes have been founded by the Ministry of National Education, with a Secretary's Office for Vocational Guidance in the principal town in each "département," vocational guidance offices in large towns or industrial centers, and the National Institute of Vocational Guidance in Paris for the training of a specialized staff remunerated by the state and assigned at large. Placement Offices are chiefly engaged in the readjustment of workers. Vocational guidance offices give advice to youths who, when they leave school, have difficulty in choosing an occupation. Although vocational guidance is not compulsory, a guidance certificate is demanded when children enter factories and workshops as apprentices. There is usually one vocational guidance office in each department in France and in some departments more than one. The total number is 186, of which only about 100 function regularly. There is usually only one counselor in each office, except in the largest offices. Each year, on the average, 850,000 children leave school to go to work. So far, in spite of the foregoing provisions, only 30,000 pass through the vocational guidance offices.

The National Institute of Vocational Guidance deserves to be particularly mentioned for the training of guidance counselors. Founded in 1928 under the auspices of the Division of Vocational Education and the Ministry of Education, the Institute was officially recognized in a decree in 1930. Its stated aims are (1) to provide adequately for the training of vocational counselors; (2) to act as a clearing house for the reception and dissemination of information on vocational guidance; (3) to promote, with reference to questions of vocational and educational guidance, such research as is necessary for the improvement of methods and the evaluation of their results.

The Institute offers normal courses in vocational counseling which lead to the *diplôme de conseiller d'orientation*. It possesses a library of over two thousand volumes and receives eighty periodicals in all languages and from all countries. One phase of its research program has been based upon a study of the responses from the thousands of children who have been subjected to tests and have answered the questionnaires used in connection with the service. Another is that of fundamental research in psychological and physiological reaction which have a bearing upon occupations. The Institute is not organized for the examination and counseling of a large number of children, but rather for serving a comparatively few with a view to studying standards of good procedure and for the gathering of data which can be used for research.

Supplementing the public provisions, private groups are permitted by law to interest themselves in vocational guidance and even to organize vocational guidance offices. One such group is the "Caisse de Compensation de la Région Parisienne." The French system of family allowances, without regard to wage payments, involves considerable accounting which is necessarily accompanied by home inspection for the purpose of checking upon the data supplied by the worker. Usually this is routine, but some groups of employers are more social-minded than others, and the highest point seems to have been reached in the metal working trades in the Paris area where the social welfare facilities include clinics, biological laboratories, hospital accommodations, recreational rooms, school rooms for the teaching of household arts and—a complete guidance service.

Another private group is the Chamber of Commerce of Paris, which has created a central Office of Vocational Guidance for the benefit of all children leaving school. The Chamber's major educational activity has been the organization of trade schools (ateliers-écoles) characterized by an initial year of tryout in several fundamental occupations.

Thus, in various ways, many young people are oriented toward industrial and commercial activities for which they are well fitted.

In France, as everywhere and always, generalizations regarding special emphases and general trends in vocational guidance and vocational education are quite likely to misinterpret the situation. Individual workers in the field, with different backgrounds and different training, approach the problem from different angles and use different methods. The psychologists put their faith in psychology, the physician in physiology. The school administrators and teachers put their faith in one or the other, or both, or neither. Likewise the employers. The parents do not know and the children do not say. However, three generalizations seem warranted, if they are considered in the light of more specific explanations. One is that great emphasis is placed upon physical examinations, and another that among the various types of psychological examinations, the paper test has the most prominent place, at least for adolescents; wherever a vocational guidance program has been conducted these tests have been applied intensively and extensively. The third generalization is that the tryout program of the trade schools of the Chamber of Commerce of Paris has given conclusive evidence of the validity of vocational education.

In summary it is important to point out some significant likenesses and differences among the European countries and between the United States and other countries. In the European countries vocational guidance is generally under the supervision of the Ministry of Labor. In France, however, all vocational guidance offices are under the supervision of the Vocational Division of the Ministry of Education. This brings about a much closer cooperation between vocational education and vocational guidance than is the case in other countries. However, in practice, vocational guidance activities evolve, either as private institutions, or out of the placement activities under the French Ministry of Labor, and are carried on in the same offices. Insofar as one may speak of a *system* of vocational guidance in France, one may say that it is initiated by local groups, under the supervision of the Ministry of Education, in cooperation with the Ministry of Labor. This, of course, has no parallel in the United States.

The National Institute of Vocational Guidance is outstanding as a center of research and training. Those associated with it are not only well equipped technically but are in positions of authority and may bring their influence to bear upon other parts of the country. In the United States there is no similar single point of radiation although in recent years the United States Office of Education, through its Division of Occupational Information and Guidance has done much to stimulate interest in the field.

In the counselor training course of the Institute much attention is given to the study of physiology. In the counseling of children great weight is given to the findings of the medical examiner. In the Paris vocational schools where no great credence is given to psychological tests, a whole corps of doctors is engaged in giving thoroughgoing examinations to prospective and present pupils. A study of the body is considered the first step in the study of the human being as a worker. In the United States the data of the school doctor are usually included in the school records and are considered as of some significance in guidance, but there is no such emphasis as in France.

The vocational guidance service which has developed in the *Caisse de Compensation* is a striking illustration of the possibilities of making guidance work in a vital social situation. While this Caisse is the only instance in France where an institution outside the schools or the employment offices has adopted a well organized program, there are numerous social agencies in the United States where this has been done.

The organization of a group of trade schools in Paris under the Chamber of Commerce, subsidized to some extent by the government, pleases the parents and meets the real needs of industry and commerce. In the United States vocational school administrators have usually organized councils or advisory committees of employers and trade men who cooperate in maintaining a live and useful curriculum. These trade bodies are also most potent factors in affecting sound vocational guidance.

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1. Keller, F. J. and Viteles, M. S. *Vocational guidance throughout the World*. New York: W. W. Norton, 1937. Chapter V, from which most of the foregoing material has been drawn, is based partly upon information gathered in the field with the assistance of the Bureau International de l'Enseignement Technique. The Secretary of the Bureau, M. A. Lomont, has been good enough to criticize and revise this article, bringing it up to date as of August, 1945.

F. J. K.

G

GERMANY. Vocational guidance in Germany originated from different sources. Because it was difficult for women to enter many of the occupational fields, progressive women's organizations around 1900 created special information services for women who wished to get started in a vocation. At the same time the handicraft trades tried to get better qualified apprentices by selective processes. Youth welfare agencies, too, became aware of the need for planned employment services including proper vocational guidance for youth. The strongest impetus to the formation of a centralized governmental agency for employment services and vocational guidance came during the war and post-war period of World War I when hundreds of thousands of wounded veterans returned home and needed vocational guidance. The situation was made even more difficult because millions of youths during the four years of war had not received a satisfactory vocational training, and many of them had never been properly placed. On December 12, 1918 the first governmental edict was issued which established a legal base for public vocational guidance and for employment services for apprentices. For a long time there was a tendency to tie up those services with the school system, but ultimately they became part of the governmental employment services with which the schools cooperated more or less closely. At first no monopoly was conceded to the public employment services. Private agencies, usually maintained by welfare organizations, continued to exist under official regulations and accountability.

Their importance diminished, however, gradually. The Unemployment Insurance Law of July 16, 1927 made vocational guidance an obligatory task for all branches of the public employment services. The law specified that vocational guidance be given impartially and without charge. The guidance process included consideration of the physical and mental capacities of the individual counselee, his inclinations and interests, as well as his economic and family status. At the same time due attention was paid to the supply and demand situation of the labor market and to the prospects in the different occupations.

Up to 1933 Germany had developed a rather extensive system of vocational guidance. There were offices, which often included psychological, especially aptitude testing services, in more than 500 cities and even in some rural sections of the country where services were given by traveling offices. Great attention was paid to securing the cooperation of the parents and especially of the school. It must be stated, however, that no comprehensive vocational guidance program existed in either elementary or secondary schools. Vocational information service and vocational exploratory activities were rather sporadic. Thus the school's outstanding service to vocational guidance consisted in reporting the counselee's conduct and subject matter performance to the guidance counselor, in recommendations based on the teacher's observations of his pupil, and finally in the school physician's records.

Next to active vocational guidance attention was focussed upon the problems of job analysis and especially on the preparation of aptitude questionnaires and tests for which men like Moede, Piorkowski, Poppelreuter and Giese have become internationally known. In practice, however, tests were as a rule given only in cases of doubt, that is after other methods (personal interview, evaluation of school records, and—in rare cases—vocational trial) had failed to determine the specific aptitude of the counselee. Group tests were given only in a few communities.

The Nazi regime changed the democratic principles of vocational guidance completely. It placed the needs of the state, that is, preparation of Germany for war above the interests and inclinations of the individual. Vocational guidance under the national socialist regime, continued to pay greatest attention to the individual's mental and physical capacities in order to have him placed wherever he could be most effectively occupied in the service of the nation. In centrally directing youth into those occupations which served directly or indirectly war-preparatory purposes, it became imperative to abolish all non-governmental guidance agencies. The Law of May 11, 1935 gave the Reichsanstalt fuer Arbeitsvermittlung und Arbeitslosenversicherung the monopoly over vocational guidance in Germany. The following principles became basic for the operation of vocational guidance in Germany until the beginning of World War II:

1. All German youths were to be encouraged (and at times even requested) to accept vocational guidance counseling; adults too who wanted to choose or change their occupation were asked to make use of the official services.

2. Vocational guidance was to examine the physical, mental and moral qualifications of the counselee, but heed his personal interests

and inclinations only if they were not in conflict with the needs of the "national community."

3. The need of a special trade or profession for qualified personnel had to be subordinated to the economic and social needs of the state. It was strictly forbidden to favor any one occupational group with so-called best qualified applicants.

4. Vocational guidance—on account of its recognized importance for the nation—was, as already mentioned, exclusively to be given by governmental agencies.

5. The guidance system was to be enlarged under more active participation of the school and especially of the Hitler Youth. Guidance services were to become obligatory for all youths planning to leave school.

The activities of vocational guidance under the Nazi regime consisted of:

1. Giving information to all youths and to the persons responsible for their education about the importance of vocational guidance and about the different occupations open to youth.

2. Cooperation with the school in order to reach all pupils leaving school. Vocational questionnaires were issued to all interested students, while the teachers were consulted with respect to the mental and moral qualifications of the counselee. The school physician was consulted with regard to his physical status and the Hitler Youth with respect to his social attitudes and political reliability.

3. The actual guidance process taking place in a confidential interview. Here the counselor considered the specific aptitudes and interests of the youth, his social and economic background in the light of the changing demands of the national labor market with specific consideration of local needs.

4. Aptitude testing in doubtful cases only, and with a view to securing a total inventory of the testee's aptitudes and mental capacities. This procedure did not, of course, preclude subsequent specialized aptitude tests.

5. Cooperation with the different Labor Front and trade groups in order to ascertain working conditions and placement possibilities for the young apprentice.

6. Placement services for apprentices only. Since these services were dictated by current and prospective needs of local and national economy, in time it became difficult for anyone to start a vocational career outside of those occupational groups which were officially recommended for the acceptance of the apprentice.

The appointment of vocational guidance counselors in Germany psychological, especially aptitude testing services, in more than 500 cities and even in some rural sections of the country where services were given by traveling offices. Great attention was paid to securing the cooperation of the parents and especially of the school. It must be stated, however, that no comprehensive vocational guidance program existed in either elementary or secondary schools. Vocational information service and vocational exploratory activities were rather sporadic. Thus the school's outstanding service to vocational guidance consisted in reporting the counselee's conduct and subject matter performance to the guidance counselor, in recommendations based on the teacher's observations of his pupil, and finally in the school physician's records.

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6. Placement services for apprentices only. Since these services were dictated by current and prospective needs of local and national economy, in time it became difficult for anyone to start a vocational career outside of those occupational groups which were officially recommended for the acceptance of the apprentice.

The appointment of vocational guidance counselors in Germany was at all times regulated only in general principles. There was no official training program for guidance counselors. As a rule the vocational guidance counselor had to be 28 years old in order to be appointed. He or she had to possess satisfactory experience (rather than training) in vocational counseling and to prove a background of at least five years of successful practical experience in any skilled or professional occupation, as well as some experience in educational work with youth.

It is impossible to estimate the results of vocational guidance in Germany, for World War II brought the complete breakdown of all its activities. The ever increasing demands of war economy permitted neither selective processes nor any extensive vocational training. The so-called labor registration system channeled indiscriminately every German youth from school age on into the dwindling reservoir of German labor. For instance, a decree of labor dictator Sauckel of April 1942 permitted compulsory agricultural work in any part of the country for boys of fifteen and sixteen and for girls seventeen years of age. Younger children had to do similar work near the parental home. Thus vocational guidance became increasingly superfluous and its services practically ceased in 1943.

The reconstruction of vocational guidance, based upon the democratic principles of respect for individual rights and initiative, offers a great challenge to post-war Germany. With her social and economic foundations badly shaken, with literally millions of youths without any occupational training of any consequence and with little chance for placement in the near future, and finally with masses of trained workers forced to leave armament and related industries, vocational guidance will have to play an important part in the rehabilitation and re-education of the German people.

H. S. L.

GREAT BRITAIN

General Attitude Toward Guidance Problems

The need for the systematic guidance of young people in matters of choice of occupation has been widely felt in Britain during most of the present century. But owing to our preference for local initiative and responsibility, any practical measures suggested for meeting the need have never been wholly acceptable and, accordingly, have not been universally applied. It is, of course, true that many of the Employment Exchanges set up by the Ministry of Labour have had juvenile departments for over thirty years, but during that time considerable diversity of procedure has appeared even when the general aims have been identical.[8]

Moreover, an agency which originated, in the first instance, to help those seeking work in times of economic depression could not be expected to adjust itself easily to that wider view of guidance problems which the definition adopted by the American Vocational Guidance Council—that Vocational Guidance is "the giving of information, assistance and advice, in choosing a career, preparing for it, entering it and progressing in it"—implies.

Clearly, Vocational Guidance presents several different aspects, of which the finding of work, or *placement,* is important only as the appropriate sequel to what has gone before. If a career is to be *chosen wisely,* due regard must be paid to the individual's abilities, attainments, tastes, character qualities and ambitions; and if *preparation for the selected career* is to be properly carried out by means of general education and special training combined, adequate attention must be given to the nature of that education and training and to the question of where and by whom it is to be provided. Such considerations bring Vocational Guidance into close association with the problems of Educational administration and the more progressive minds in Britain have already seen Vocational Guidance as part of the broad educational task of preparing the rising generation for its duties and responsibilities in adult and occupational life.

Naturally, it will take a long time for such ideas to become generally applied in practice; yet it is safe to say that the recent Education Act (1944)—which provides for the raising of the school leaving age to fifteen in the near future, and to sixteen as soon possible thereafter, and with it, a broadening of Secondary Education to suit all types of ability, will bring about a considerable change in the general attitude towards Vocational Guidance and in the organizations which will develop to achieve its objects. And, in these, *After-Care,* which includes facilities for continued education, will not be overlooked.

Vocational Guidance in Secondary Schools. Careers masters

At present, the most highly developed interest in Vocational Guidance is, as might be expected, in the existing Secondary Schools. Here the problems of the choice of a career have demanded and received attention over a long period. When the age of leaving school is delayed to sixteen, or later, as is normal in such schools, some preparation for a career has usually been expected. And, although the academic courses of study which most secondary schools preferred were formulated, and often extolled, for their "non-vocational" content and approach, they nevertheless constituted an essential "pre-apprenticeship" preparation for many of the professions and occupations desired by secondary school pupils.

Given a standard curriculum of studies (with slight variations to suit local circumstances) questions of differentiation according to ability are not so prominent as they are when the courses are varied, and in such circumstances Vocational Guidance generally means providing information about the requirements of professions and the methods of entry. Books and pamphlets supplying this information have been quite plentiful and in some schools one of the staff has voluntarily undertaken the task of communicating this information to those who needed it. In this way "careers masters" (and mistresses) came into being, at first, unofficially, but in recent years with the encouragement and support of governing bodies. It has not, normally, been part of their duties to attempt to find employment for those whom they wished to help, though opportunities of placement have no doubt been taken whenever they have occurred.

The *placement* of Secondary School pupils, especially in the larger centers of population, fell naturally to the organizations set up by the Ministry of Labor, and, on the whole, this work has been well done. In the cities, London and Glasgow among others, Careers Councils were formed to deal exclusively with the guidance problems of the secondary school pupils, and, as members of these Councils, the Associations of Teachers and Headmasters, as well as representative groups of employers, shared actively in the work.

Guidance and placement was also undertaken by private bodies, such as the Central Employment Bureau for Women (London) and the Students' Careers Association. Handbooks of information were compiled by these and other agencies (e.g. the Journal of Careers) as a commercial undertaking. Equally valuable, however, have been the pamphlets on careers published by the Ministry of Labor to help guidance work in the secondary schools.

But perhaps the most notable of the agencies operating outside the state system which have concerned themselves with the vocational guidance of secondary school pupils, is the National Institute of Industrial Psychology (London), which has been active since 1922, both as an Institute giving individual guidance (at a fee) and as a research and training center. It has carried out many important investigations into the techniques of vocational guidance and vocational selection, and has conducted a number of training courses for careers masters and vocational advisers. Its trained staff have been in constant demand as sources of information on guidance procedures.[7][9]

Development of a National Vocational Guidance System for All School Leavers

Parallel with the development of guidance activities in the secondary schools there was a strong movement to secure equally suitable guidance for those who had to leave school at fourteen; but this depended less on voluntary agencies and was, in the main, a state-organized service. Its characteristic features were:

(a) Legislation.

The provision of some sort of *organized* assistance for adolescents seeking employment began in Britain in 1910. Under the provisions of the *Labor Exchanges Act* (1909), the Board of Trade set up Labor Exchanges which were afterwards called Employment Exchanges. These were intended to provide a link between workpeople seeking employment and employers who had work to offer. Special arrangements were made for dealing with juveniles. Advisory Committees were set up to advise in the detailed working of these departments and to assist boys and girls in choosing an occupation.

Provision was also made under the *Education (Choice of Employment) Act* of 1910, to enable the Local Education Authorities to give boys and girls "assistance with respect to the choice of suitable employment by means of the collection and communication of information and the furnishing of advice," and a number of authorities readily accepted this responsibility and appointed Juvenile Employment (or Welfare) Sub-Committees. The work actually done varied from one Committee to another but in most areas an attempt was made to give advice by talks and pamphlets, as well as by personal interview. In Kent and in Liverpool very useful pamphlets were produced.

The participation of the Education Authorities in this work seems to have been considered a good thing, for these activities were confirmed in the Education Act of 1921. Additional responsibilities were, however, imposed by the *Unemployment Insurance Act* of 1923, which required from all who undertook to advise on Choice of Employment, the local administration of Unemployment Insurance in respect of boys and girls under eighteen years of age.

The effect of this piece of legislation was to cause a number of Education Authorities, who had not yet undertaken the organization of Vocational Guidance procedures, to hesitate, so that when, in the following year, the duty was laid on the Ministry of Labor of providing Vocational Guidance in those areas in which the Local Education Authority had not yet undertaken this responsibility, the opportunity of developing a national vocational guidance system under the direction of the Education Authorities was temporarily lost. Whether it will ever occur again is not clear at the present moment.

By 1925, in about half of the Local Administration Areas of England and Wales, the duties prescribed by the Choice of Employment Acts had become the responsibility of the officers and servants of the Education Committees; in the remainder, including Scotland, these duties fell to the officials of the Ministry of Labour and the members of its Juvenile Advisory Committees. In all cases, however, the Ministry of Labour remained the ultimate Central Authority.

(b) Organisation. Juvenile Advisory Committees.

The machinery of administration followed the same general lines in most of the areas in which vocational guidance was actively organised. The Juvenile Advisory Committees were composed of representatives of the Local Education Authority, teachers in elementary and secondary schools, employers, workpeople from the principle industries of the district, and other persons interested in questions relating to the welfare of youth. As a rule the persons appointed were selected with care and some of the Committees so formed functioned extremely well; but the value of their work has inevitably varied with the skill of the organising secretary or other official and with the knowledge and enthusiasm of the individual members.

The general procedure adopted by Juvenile Advisory Committees (before the war seriously interfered with all administrative arrangements) was as follows:

(i) During the last term of the child's school career the head teacher supplied on a special form a confidential report upon his, or her, scholastic attainments, character and medical record, together with suggestions as to the kind of work for which the child was best fitted.

(ii) This information, supplemented by particulars of the home circumstances of the child, was considered at a 'school conference' to which the parent and child were invited. The conference was held in the school and the persons present might include the head teacher, the heads of associated evening schools, members of the school Care Committee and of the Juvenile Advisory Committee, the latter as industrial experts. The secretary of the Juvenile Advisory

Committee, or other official, usually arranged the conferences and recorded the recommendations made. After consultation with the parent and child the conference recommended a suitable occupation or group of occupations, having regard to local conditions, and also gave advice in regard to such important kindred matters as attendance at evening school, social club facilities and the like.

(iii) If the child desired help in finding a suitable post he, or she, was invited to go to the Juvenile Employment Exchange at the end of the school term, when the appropriate officer would arrange for a visit to a prospective employer.

(iv) After placement had occurred (whether through the agency of the J.E.C. or not) the committee endeavoured to keep in touch with the boy or girl during the early years of employment by means of a system of industrial supervision. The Secretary of the Juvenile Advisory Committee arranged for the employer to be visited, as far as possible within three months of placing, in order to ascertain the suitability of the employment and the degree of satisfaction expressed by both the employer and the employee. The young people were also invited to 'evening rotas' or 'open evenings' at which they met members of the Committee and were encouraged to report on the progress they were making or on any difficulties they had encountered which might be adjusted through the Committee. In addition, with the help of the School Care Committee (Children's Care Committees were not developed as part of the Vocational Guidance system, but were worked into it as a desirable adjunct. They were first created in London in 1907 for schools classed as 'necessitous,' in order to apply the provisions of the Act dealing with school children unable through lack of food to profit from attendance at school. Gradually, the meaning of 'Care' was extended, and home visits are now an essential part of all Guidance and clinic work.) (where such existed) visits were paid to the homes of those young people for whom this method of supervision was thought desirable.

(c) Effectiveness in practice.

The above procedure constituted a solid framework for sound vocational advising but in matters of detail there were many unsatisfactory features. The reports of head teachers could, and did, vary enormously in value (since the information on which they were based was often unreliable), and the contributions of the members of the Committee depended greatly upon their knowledge and skill, their interest in the work and their ability to appreciate the juvenile point of view. Undoubtedly, much depended on, and was left to, the organizing secretary.

But although defects in the system were obvious there were only isolated attempts to make use of better methods, and especially of the results of experiments in the use of psychological methods of assessing the child's abilities. Here and there, in the annual reports of the Ministry of Labour mention is made of experimental work; thus

> "Some Committees, e.g. Middlesborough, employ psychological tests to assist in the selection of an occupation for certain juveniles"

but

> "such tests are not widely adopted by Committees at present."

Everywhere, however, there were obvious difficulties in bringing the value of Vocational Guidance to the notice of all who needed it, as well as in making it effective, difficulties which were at times increased by the conditions of employment.

> "Sometimes, owing to the lack of variety in local occupations the scope of the advisory work is considerably narrowed and a few committees complain of a certain 'air of unreality' in their advising. The necessity of some such mode of advice is, however, fully shown by the ignorance of the average juvenile and parent of the conditions and prospects in the various types of employment."

But even when the Juvenile Advisory Committees functioned effectively the proportion of school leavers directly influenced by them was often disappointing. Many ignored the advice altogether.

The picture presented in Jewkes' inquiry in five Lancashire towns, between Easter 1934 and July 1936, is not, perhaps, truly representative of all industrial areas, but the facts disclosed were indeed discouraging.

Two thousand children were studied—

(a) before leaving school (facts were obtained regarding medical record, school report, part-time employment while at school, employment desired and employment recommended by the teacher or other adviser.)

(b) after leaving school (by visits at three to six months intervals.)

The investigators reported that in two-thirds of the cases the losing of a job was the outcome of unwise or ignored vocational guidance, discontinuity in the economic system or exploitation by unscrupulous employers. Commenting that "the parent is still the most important placing officer" they suggested that more should be done to educate the parent as well as to improve the associated activities of the school and the Juvenile Employment Exchange.

In contrast to this somewhat depressing report it would not be difficult to quote instances (Birmingham, among others) in which it is apparent that the Vocational Guidance organisation has earned a steadily increasing appreciation from parents and employers alike. But in such cases every effort was made to provide a worth-while service and, in particular, to ensure that the information on which advising was based was as accurate as possible.[1]

(d) Research. The Use of Psychological tests and methods.

Improvement in the technique of Vocational Guidance can be brought about by

(i) more comprehensive and accurately recorded studies of occupations

(ii) more accurate studies of the individuals to be advised

(iii) making the interview (at school conference or elsewhere) more effective.

As early as 1922 experimental work of this kind was being undertaken and, from that date to just before the outbreak of war in 1939, a great deal of valuable information was collected. Although extensive use of the results has not yet been made it may be said that the validity of these procedures is now generally admitted and it will probably not be long after a more normal organisation is resumed that improved techniques will be more widely used.

The first experimental use of psychological tests and methods of examination in Vocational Guidance in Britain was in 1922 when the Industrial Health Research Board and the National Institute of Industrial Psychology began a joint study of the problems of guiding elementary school children who leave school at fourteen.[6]

The occupations actually entered by two thousand leavers in one of the London districts were analysed; then, one hundred children attending three schools in the same district were advised at school, especially in the elementary school. Vocational guidance supplies the pupils with all possible information about a job and its relative value. It emphasizes the immense importance of a wise choice and cultivates in them a professional conscience and ideals.

(II) The lack in Greece of Vocational Guidance Centres by which such a situation can be corrected or avoided. In other countries their number is being daily increased and they tend to have an influence equal to that of the schools.

(III) There are insufficient facilities for vocational teaching.

(IV) Our present educational system is insufficiently varied and flexible to satisfy the demands of the students of today and the requirements of the complex modern state. (More types of schools are required in Greece than just the elementary (δημοτικὸν) and secondary (γυμνάσιου) and the old promotion system by examination in schools must be modernized.)

(V) There is no control whatsoever of choice of employment. Factors of pure chance, economic position of parents, family tradition and social snobbery must be replaced by factors of ability, talent and temperament and of the professional and technical needs of the country.

Prof. Exarchopoulos amongst other remedies advocates the following:

(A) Vocational guidance should be introduced in all schools of general education, especially during the students' last years. Thus, with the aid of special lectures and discussions or in the course of normal teaching, the students can be given an idea of the scope, importance and characteristics of the various employments, especially those of local importance. Also the absolute necessity for a wise choice with a clear explanation of all the factors which must be taken into consideration can be emphasized to them.

(B) Similar centres of vocational guidance to those in Europe and America should be established in Greece and the value of their work should be advertised. They should be fully equipped and prepared to offer the best possible advice and direction to all. In these centres, students having completed their normal training, should be specially examined on their vocational talents by methods designed for the purpose.

(C) Systematically organized vocational training should be made available. This can be done firstly by the modification of school programmes, especially of elementary schools and of schools midway between the elementary and the secondary (μέσα ἢ ἀστικὰ σχολεῖα) so that they include vocational subjects. The subjects to be included in such schools will be chosen by reference to the local labour demands and to the kind of people which the school serves.

To many of these schools a purely vocational form should be added. This is the case in many other countries where the highest form is purely vocational, the type being varied according to local requirements, e.g., agricultural, maritime, commercial, technical, domestic, etc.

Independent of these measures it is essential to establish the highest possible number of purely vocational or technical schools, specially and systematically preparing students for every kind of job. To start with, careful investigation and research will be required to determine the type, standard and location of each school.

Finally the whole educational system of the country should be reorganized. It should be more varied so that different types of training are available for our students. In addition to those schools already functioning it is necessary to establish schools of other types so that we have a network of educational institutions of general education catering not only to the various standards of mental development of the children, their hobbies and their talents, but also to the local requirements and industrial demands. So in addition to the Classical Secondary Schools (γυμνάσια) a number of Technical Secondary Schools (πρακτικὰ λύκεια), in addition to those already existing should be established, as well as other types of secondary schools, which other countries have by experience proved to be very useful. There should also be a large number of schools (μέσα ἢ ἀστικὰ σχολεῖα) midway between the elementary and the secondary schools. These schools would be designed for those pupils who require more than an elementary education, but neither a purely classical nor a purely technical one. Every facility should be given to the students to attend a different type of school as the development of their qualities and their ability proves necessary. Further the programmes of elementary and secondary schools must be reviewed. Lastly the present obsolete system of promotion by examination should be replaced by the new methods of selection by which value is placed not on memorising scholastic subjects, but on the assessment of real scholastic abilities, maturity, intelligence, powers of reasoning, hobbies and talents, so that it will be possible to promote from Form to Form those who are really worthy and so that only those pupils will be admitted to the more advanced schools who can take full advantage of them. This selection is an indispensable condition of the placing of each individual where he is best fitted.

Practice

In Greece practice has not kept pace with theory. It has not, of course, been entirely neglected, but has been far from universal. The reasons for this are many. The chief ones may be said to be the wars, the internal difficulties and the economic situation.

Vocational guidance is being practiced in very few Greek schools. Outstanding amongst those where it is practiced is the Experimental School of the University of Athens, where vocational guidance is carried on in accordance with the teachings, already mentioned, of Prof. Exarchopoulos, its founder and first inspector.

In this school systematic observation of the pupils is made and an "Individuality Chart" kept. There is a special filing system with a separate large envelope for each subject, containing the following records:

I. An annual photograph.
II. Life story with pre-school life in special detail.
III. Information Questionnaires filled in by the parents.
IV. Records of physical development.
  (a) Health.
  (b) Physical measurements.
V. Records of mental development.
  (a) Pen pictures by the tutors.
  (b) Psychograms (detailed and systematic accounts of characteristics).
  (c) Mental assessments as well as measurements of the senses of sight, hearing and touch.
VI. Samples of the subject's handwriting.
VII. Free hand drawings by the subject.
VIII. Free compositions.
IX. Records of general and vocational talents.
X. Records of scholastic achievements.
XI. Letters with reference to the subject.
XII. Other documents and general observations.

From all these, the individual characteristics of the subject may be ascertained and accurate conclusions reached regarding his physical and mental development and vocational talents.

For the assessment of individuality, methods recommended by modern psychological science are used, especially systematic observation and special experiments.

The students of the University of Athens who will later become secondary school teachers and elementary school teachers who are taking a supplementary course there, are introduced to these methods by the personnel of the Laboratory for Experimental Pedagogy of the University. We hope that these methods will in time be introduced to the schools of the entire country.

Let us now leave the subject of the application of vocational guidance in Greek schools and examine our next subject, which is the Greek Centres of Vocational Guidance.

The late Emm. Lampadarios, Professor of School Hygiene of the University of Athens in collaboration with Professor G. Sakellariou tried to establish in Greece a Private Laboratory of Vocational Guidance. This effort was however handicapped by the advent of the First World War. In the Royal Decree concerning the organization of the leading Children's Welfare Centre in Athens of October 1936, provision was made for a Department of Vocational Guidance. But no provision was made for the financial support necessary for its organization and maintenance. The first real interest taken by the government was shown in Statutory Law of School Services No. 1805 of 1939 which was chiefly initiated by the late Professor Emm. Lampadarios. This law established in the Athens and Salonika Pupils Welfare Centres separate Sections of Vocational Guidance. The Section of Vocational Guidance in the Athens Centre, Director of which is Mr. D. Stephanou has been organized under the direction of Mr. V. Solomonides. Mr. Solomonides specialized in psychanalysis with special reference to vocational guidance in the University of Prague of which he is a Doctor of Psychology and brought with him from there a large number of methods for the assessment of vocational talents, which he applied in Greece. With these methods he also tested the pupils of several schools and did a great deal generally in the field of vocational guidance.

We must also mention the work done in the Psychological Laboratory of the University of Athens relative to this subject. Theofilos Voreas, Member of the Athens Academy of Sciences and Professor of Philosophy of the University of Athens, was its founder and first Director. Professor G. Sakellariou the successor of Theof. Voreas in the chair of Philosophy is its Director today. In this Laboratory, besides normal work, methods for the assessment of vocational talents are applied.

Let us now say a few words on the practical application in Greece of selection methods involving tests. We will only mention the principal ones.

Such methods were applied under the guidance of Mr. Ph. Skouras, Lecturer in Neurology and Psychiatry of the University of Athens, in the modern "Minion" Departmental Stores for the selection of sales people and clerical staff since 1939, and since 1943 by J. Chryssochou Professor of Scientific Management of the Higher School of Manufacturing Studies and Mr. G. Vallindas, Engineer. These last two men also applied methods for the assessment of the abilities of the same personnel.

These methods were based on various scientific works on the subject, especially those published by the Psychological Corporation (of America).

Similar methods have been applied since 1924 by Prof. Chryssochou in the "Bank Credit Commercial Hellenique S.A." for the selection of bank officials in the lower grades.

Methods for the selection of workers in Greek basic industries have also been applied under the guidance of Mr. V. Solomonides.

Lastly we must mention the work at present being planned for the Greek Army for the introduction of an officer and other ranks selection system along lines similar to those in use in the British Army, which has found them to be very successful. It is well known that such a system was first introduced during the 1914–1918 War in the Army of the United States of America and it was the forerunner of the present systems in use in the American and British Armies.

In order to execute this plan, a Selection Directorate has been established within the Greek General Staff, under the direction of Lt. Col. (Infantry) Pan. Assimakopoulos, as well as a Research Branch under the direction of Major (Medical) Dim. Younis. There has also been established an Advisory Committee to the Greek Army, consisting of qualified psychologists, professors of the University of Athens. The purpose of this Committee is to advise and supervise the adaptation of the British Selection System and the formation of a Greek System of Selection.

The Officers of the Selection Directorate of the Greek General Staff have recently undergone an intensive training, both theoretical and practical, in Cairo at the British "Middle East Central Office of Officers and Other Ranks Selection" (O.2.E.,(S.P.) G.H.Q., M.E.F.), which is functioning very efficiently there under the direction of Lt. Col. J. H. Alleyn (General List). This course had been preceded by a shorter one held at Cairo on the selection of officers. Undoubtedly this plan will soon be made effective and the results will be evident.

The achievements of Greece in the field of vocational guidance have thus been briefly outlined. As yet, the achievements have not reached any great magnitude, but their importance must not be underestimated. Taking into consideration the vitality and other sterling qualities of the Greek people, we believe that, now that victory has been won, Greece will be able to multiply these achievements and raise the standard of its living and civilization.

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GROUP ACTIVITIES AND TECHNIQUES. The end point of all guidance is individual, in that it aims to help the individual discover and make use of the educational and vocational abilities and opportunities he has or can develop. It is usually given best on an individual basis in conference with the qualified counselor, but oftentimes it is also advantageous to use the group approach. The somewhat commonly-used term, "group guidance," implies achievement of guidance aims through activities centered in groups of two or more individuals—ordinarily, class-size groups approximating twenty to thirty or more. These group activities are not to be considered as ends in themselves, but as a means of laying the foundation for and facilitating the achievement of better individual guidance.

Advantages of Group Activities in Guidance

Advocates of the group approach claim that it: (1) is the only truly effective means whereby the minimum essentials of guidance can be assured for every student and whereby the guidance activities of the secondary school can be integrated and articulated in present-day school situations, (2) facilitates use of the preventive problem solving approach, since it provides the counselor with opportunities for observing and studying his counselees, (3) makes for economy of the counselor's time and energy in imparting many types of vocational and educational information needed as a background for individual counseling, (4) provides an opportunity for counselees to learn from the group and from each other, and (5) gives opportunity for consideration and solution of educational, vocational, and social problems involving group opinion and participation.

Scope of Group Activities

Allen and Bennett[1] submit the following major areas as suggestive of the scope of group activities in guidance: (1) orientation in new school situations, (2) planning a well-balanced program of learning experiences, (3) improving learning techniques—study methods, use of the library and other school facilities, social and athletic skills, (4) improving personal adjustments and social relationships, (5) self-appraisal and wholesome self-development, (6) formulating suitable life goals and projecting well-balanced life plans, (7) choosing activities and evaluating experiences directed toward the achievement of tentative goals, and (8) developing a growing system of values or life philosophy. It is noted that these activities involve consideration of the needs of students both in adjusting to their present problems and in making future educational, vocational, and life plans.

Grade Placement of Guidance Topics

The objectives of group activities logically vary with the age level of the groups involved from elementary school through the college and adult levels. The selection of topics to be emphasized in different grades is dependent upon many factors, the primary one being the needs of the group members at the respective levels. Other important factors are the type of school organization in effect, the type of student body and community concerned, the comprehensiveness of the institution's guidance program, and the adequacy and training of the guidance staff. Topics of major interest, such as those concerned with orientation, study skills and work attitudes, self-discovery of interests and aptitudes, educational information and planning, occupational information and planning, should be introduced at the grade levels where they first become pertinent and be progressively continued with varying degrees of emphasis throughout the succeeding school and college levels. The New York State Counselors Association[9] lists such a series of objectives from elementary school through the after-high school years; also, a series of major guidance topics with varying degrees of emphasis by grade level. Allen, Stewart, and Schloerb[3] give excellent lists of topics and lesson suggestions with recommended grade placement.

Common Types of Group Activities

In secondary schools today, the two most common types of designated guidance groups are the homeroom and the guidance class. The homeroom, when its administrative functions are properly subordinated to the guidance emphasis, may in a sense also be considered as a guidance class. Other types of group activity are also used, but are usually considered as supplementary to the homeroom, the guidance class, or to both in the case of those schools having comprehensive guidance programs. These include: (1) regular school subjects, (2) school assemblies, (3) clubs and other cohesive groups, (4) career conferences, (5) college conferences.

The Homeroom

A homeroom is a unit of school organization which is under the direct supervision of a teacher known as a homeroom sponsor or teacher, and which serves as the *school home* of the students assigned to it for provision of guidance and administration of certain school routine. Its predominant activity must be guidance if the organization is to merit its name. The homeroom is an effective vehicle for individualization of education in those schools where it is properly organized and administered. Its major guidance aims usually include the following, along with such other local emphases as may seem desirable at the various grade levels: (1) provision for suitable and continuing school adjustment and other types of educational guidance for all students, (2) provision of occupational information and an appreciation of the vocational implications of the various school subjects and activities, (3) development of civic-ethical-social attitudes in students and providing an opportunity for their practice, and (4) encouragement and development of intelligent leadership and followership.

There is a wide variety of practice in the administrative set-ups of homeroom programs but some of the most effective include the following characteristics: (1) it is a daily period of 20–30 minutes in length, (2) it is the first period of the school day, (3) the size of the homeroom group approximates thirty students, (4) there is provision for continuity of contact between the sponsor and his students wherever possible for the entire period of the student's membership in the school concerned, (5) students are grouped heterogeneously within their respective grades, (6) provisions are made for sponsor contacts with the students' homes or parents, (7) homeroom records are kept by sponsors, (8) the homeroom has a well-organized parliamentary organization coordinated with the school's student council, (9) extensive use is made of homeroom committees, (10) guidance responsibilities and relationships of homeroom sponsors within the homeroom and with the administration, subject teachers, counselors, special services, extra-class activities sponsors, and other homeroom sponsors are clearly defined, (11) homeroom sponsors are given in-service training for their duties, (12) extensive guidance materials and suggestions for homeroom activities are made available for the use of sponsors, and (13) there is well-organized and regular supervision of the homeroom program. Detailed studies of various aspects of homeroom organization and guidance activities are described in McKown,[8] Sachs,[10] and Dunsmoor and Miller.[5]

The core program plan in which the core teacher has the same students for one, two, or three classes, in addition to a guidance period, has been slowly but steadily gaining in favor.

Guidance Classes

A considerable number of secondary schools have organized guidance classes. These may be regular classes devoted to the study of occupations, frequently on a semester basis, but often for a shorter period of eight to ten weeks as a part of some other course, particularly ninth-grade social studies. A semester course in occupations or career planning, under various titles, is offered on an elective basis for eleventh and twelfth-grade students in a few senior high schools.

Another common type of guidance class, found particularly in junior schools, is that in which all pupils of a given grade meet in a regular period of class length once or twice each week, with the classes handled by the counselors or so-called "teacher counselors" or "guidance teachers." The most notable example of this latter type has been developed in the Providence, R. I., Public Schools under the leadership of the late Dr. Richard D. Allen. In this program each student of the junior and senior high schools attends guidance classes on a two-period per week basis throughout this six-year period. The classes are designated as occupational civics or by similar titles at the various levels, carry regular school credit, and are taught by the counselors, who have been carefully selected and trained for this work. In addition to giving consideration to the usual problems of educational, vocational, and social problems and attitudes of students, considerable attention is given in these classes to self-measurement projects involving the administration, scoring, and interpretation of psychological tests and interest inventories.

Each counselor carries a pupil load of approximately two hundred students and in addition to the group activities, has scheduled time for individual guidance, research, and record keeping.

Some Common Objectives of Group Activities

The following, with variations and supplementary emphases to meet local needs, may be considered as representative of the type of aims of guidance classes at the secondary level: (1) to provide for adequate school adjustment of students, including improvement of study skills and work attitudes, (2) to inform students of educational and occupational requirements and opportunities, (3) to teach a technique of obtaining and evaluating information about occupations or fields of work, (4) to help students secure a better understanding of their vocational interests, aptitudes, abilities, educational and vocational needs, (5) to help students establish vocational directions or goals and aid them in formulation of suitable educational and vocational plans for attainment of these goals, and (6) to provide members of the group with experience in problem solving in regard to issues of both present and future concern.

Group Activities at the College Level

A considerable number of colleges and junior colleges also offer classes, particularly in the first semester or year, emphasizing primarily orientation to the college and its activities. Attention is also given in many of these programs to such topics as self-discovery, occupational information, personality development, religion and philosophy of life, life planning, planning college programs and daily schedules. "Freshman Week" is a rather widely used orientation device at the college level for acquainting students with the institution and its requirements. It obviously has its limitations unless extensively supplemented with other group activities of a guidance nature.

Some Essentials for Successful Group Activities

As in other forms of teaching, the success of any group activity depends largely upon the interest, preparation, and skill of the leader in its planning and execution. He must know his field and his group so that he may draw upon a rich background of information and experience. He must be skillful in adapting his knowledge, experiences, and contacts to the needs and interests of his group. He must exert initiative and ingenuity in the organization and development of his materials to provide the essential variety which creates and sustains interest in the group activities.

Techniques and Procedures

There are no highly specialized techniques that are characteristic of guidance groups alone. Routine procedures and recitations are as deadening in guidance groups as in other school classes. Likewise, good techniques which stimulate thought and interest, and otherwise prove effective in regular classes at the various age levels are just as effective in guidance groups. Billings[4] and Forrester[6] are prolific with suggestions regarding techniques, devices, and procedures which prove effective in guidance classes of various types. Some are listed below with particular emphasis upon those suitable for giving of occupational information and vocational guidance, but which may be used in many other phases of group activity as well: (1) discussions, (2) radio talks, (3) preparation of radio programs, (4) motion pictures, film strips, and slides, (5) dramatizations, (6) giving, scoring, and interpretation of psychological tests and inventories, (7) case-conferences, (8) panels, (9) town meetings, (10) forums, (11) committee reports, (12) vocational tours or excursions, (13) visiting speakers, (14) question-box discussions, (15) debates, (16) quiz contests, and (17) roll calls. Each technique or procedure has both its strong points and its limitations, but when skillfully used under appropriate conditions, will yield satisfactory results and provide the essential variety needed to stimulate and sustain interest.

Conducting Guidance Discussions

Basic to a great majority of group activities is the planned discussion. Consequently, the leader of group discussions must be skilled in discussion techniques. Whenever regular meetings largely devoted to discussion are to be used, there should be observance of all or most of the following points: (1) secure the good will and enthusiastic cooperation for the work to be covered, (2) select topics for discussion carefully, (3) prepare carefully and in detail, (4) see that the group members are familiar with the sources of good informational materials on the topic to be considered, (5) present the topic to the group in a challenging manner, (6) prepare questions carefully and exercise skill in questioning, (7) be alert to regulate the amount of time devoted to various phases of the discussion, (8) encourage extensive participation of the group, both in planning and execution, (9) see that appropriate summaries are made for the group at the proper points to aid them in following the discussion's progress, (10) make sure that the discussion is never "left up in the air," and (11) assume responsibility for seeing that an effective group-thinking procedure is

Place of Questions in Guidance Discussions

Skillful questioning constitutes one of the important aspects of group discussions. They must be carefully framed and interjected into the discussion at proper times if best results are to be expected. Following are a few significant points regarding their preparation and use: (1) most should be thought questions, implying ability to use information possessed, (2) they should be relatively brief, but penetrating, (3) those which imply merely a "yes" or "no" answer usually have little value, (4) extensive use of "leading questions" should be avoided, (5) opening questions should be descriptive and report questions to challenge discussion in terms of the experience of group members, (6) the appraisal type of questions should be freely used where different points of view persist, (7) the number of questions planned for a discussion should be limited, not extensive, and (8) the questions should be stated in terms which the group will understand and appreciate.

Some Cautions in the Use of Group Activities

Realization of guidance objectives effectively through group activities is not a simple matter and is a constant challenge to the best that the counselor, teacher, or other group leader has to offer. Some group programs fail because there is not a realistic understanding and cooperative approach in formulation of the aims of the program to meet the needs of the group to be served. There must be a relatively favorable administrative set-up for the program, regardless of type, which will provide sufficient and suitable time, a recognized place in the school's program, groups of workable size, extensive helps in the form of suggested materials and methods, a clear delineation of responsibilities and relationships, adequate and regular supervision, and in-service improvement. In most situations, the program should evolve slowly, doing well what is undertaken and consolidating gains as progress is made.

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C. C. D.

H

HEARING, MEASUREMENT OF. The administration and interpretation of hearing tests require a basic knowledge of the physics of sound and the physiology of the ear. The properties of sound to be considered are volume or intensity, pitch or frequency, and duration. There are two mechanisms to be considered in the hearing apparatus: The sound-conducting mechanism and the sound-perceiving mechanism. The conducting apparatus collects and concentrates sound waves by means of the auricle and external auditory canal; a drum membrane is activated and the sound impulses are conducted mechanically through the movable, miniature cantilever system of tiny bones to the fluids of the inner ear. Here begins a chain of organs of micro-order for the translation of mechanical vibrations into nerve impulses which eventually register their impressions in the auditory area of the brain.

In the measurement of hearing the primary aim is to determine the acuity or degree of defect in hearing and to differentiate the type of hearing defect in a given ear. To adequately determine the character of hearing-loss, its origin and prognosis, these functional tests are indispensable supplements to clinical and medical data.

Tuning-fork Tests

Long before otology became a medical specialty and long before the development of the modern electric audiometer, the tuning-fork tests were playing an important rôle in diagnosing hearing difficulties. The universal use of some of these tests by otologists today is the best evidence of their diagnostic value.

The best known of the tuning-fork tests are the Weber test and the Rinné test both of which are used to differentiate types of hearing-loss. The Weber test, described as early as 1834, consists of pressing the handle of a vibrating tuning-fork on the midline of the patient's head. A 256 d.v. fork is the one usually used. If there is an obstructive or conductive deafness in one ear, the patient will hear a louder tone in the affected ear than he will in the good ear. Thus, when the patient who is hard-of-hearing in one ear lateralizes the sound toward that ear, it is concluded that deafness is caused by an interference in the middle-ear mechanism which conducts vibrations into the inner ear and not caused by damage to the nervous mechanism of hearing. This test differentiates conduction-deafness from perception-deafness, but it has no value in cases where both ears are affected. Although the Weber test is known as a tuning-fork test, it can be done just as well with the audiometer and the bone-conduction attachment. The advantage in using the audiometer is that the tone is sustained and does not die away like the sound produced by the tuning-fork.

The Rinné test, universally used by otologists, is based on the principle that for the normal ear a vibrating tuning-fork will be heard nearly twice as long by air-conduction as by bone-conduction. In administering this test the fork is struck and the handle placed on the mastoid process where it may be heard through bone-conduction for a given length of time (from 15–20 seconds in the normal ear). When the patient no longer hears the tone, the fork is removed quickly and the end of the handle inserted gently into the ear opening where it should be heard approximately 15–20 seconds more. This is recorded as a *positive Rinné*. In any case where air-conduction hearing for the tuning-fork tone outlasts the bone-conduction hearing, the response is a *positive Rinné* (+) which also may be recorded as $AC>BC$. If the process be reversed, and the tone is heard through air-conduction until it dies away and the fork handle then quickly transferred to the mastoid where it is again heard, the response is a *negative Rinné* (—) also recorded as $\mathrm{AC}<\mathrm{BC}$. In the latter case the clinical interpretation is that only an obstructive or conductive lesion exists; that is, mechanical vibrations are not getting through to the hearing nerves in the proper way. If there is impairment of the perception mechanism and no conductive interference, both bone and air conduction hearing is decreased and the response is recorded as a *positive Rinné* $(N+)$. In cases where there is extreme impairment of the conductive mechanism the bone-conduction hearing through the mastoid will be prolonged even beyond air-conduction hearing and the response will be recorded as an *absolute negative Rinné* (abs.—).

This test must be used with caution since it lends itself to complicated interpretation. For example, a patient completely deaf in one ear may report that he hears through bone-conduction when in reality the sound is radiating through the cranial bones to his good ear. In such a case it will be necessary to mask the good ear with an earphone buzzer while the Rinné is tried on the deafened ear.

Briefly, the Rinné test is a method for comparing the patient's ability to hear by air-conduction with his ability to hear through bone. The principles of this test can be carried out with the audiometer as with the Weber test.

Voice and Watch-Tick Tests

Since the voice is the medium through which hearing brings one into contact with his surroundings, it is naturally the first factor considered in cases of defective hearing. It is usually an inability or lessened acuity for hearing speech that impels a person to seek a hearing examination.

Voice and whisper tests are of some value in that they are rough devices for discovering hearing defects and can indicate which speech-sounds can or cannot be heard. Inability to hear such sounds as (s), (sh), (f), and (t) shows loss in the upper pitch range; inability to hear (r), (m), (n), and (ng) indicates loss in the middle range; and inability to hear vowels can be assigned to deafness in the low pitch area.

Voice and whisper tests have little accuracy because of variations in pitch, intensity, and quality, even in one person giving the test; such conditions make it impossible to set up reliable standards. Such tests are indispensable, however, in estimating hearing loss and in determining the results of treatment. They are usually given in the form of selected words which the patient is asked to repeat or in simple sentences to see if there is comprehension.

The watch-tick test is often used, but faces the same problem of securing reliable standards. Watches like voices vary in pitch and intensity, but unlike voices the individual watch is not subject to variation. From the latter standpoint at least the watch offers better possibilities for standardization. If a watch can be heard at a distance of 40 inches from the normal ear, the standard can be expressed as 40/40 with deviations recorded by a fraction whose numerator may vary but whose denominator remains constant. Thus, a person whose hearing was half as good as normal would have to have the watch as close as 20 inches which would be recorded as 20/40 hearing. When the problem of tonal deafness is considered, however, the watch test is of no value, for it tests hearing at only one unknown pitch level.

The Audiometer

The modern audiometer, a result of years of development and research, is the most accurate device known for measuring hearing ability. As in the use of tuning-forks, something more than a mere knowledge of the manual of instructions is required for its effective use.

The pure-tone audiometer is a vacuum tube device for generating an oscillating current which produces a pure tone that can be altered at will in pitch and volume by the tester. The tone is heard by the patient through an earphone which may be held to either ear.

Fortunately the several makes of audiometers now on the market have conformed to standards set up by the Council on Physical Therapy of the American Medical Association. The most important of those requirements are: (1) If a continuous sweep of pitch change is used, it must be from 128 cycles per second to 8,192 cycles or higher, (2) if pitch changes in discrete steps are used, the tones shall be 128, 256, 512, 1,024, 2,048, 4,096, and 8,192 cycles per second, (3) dials must be clearly marked so that these frequencies can be easily read in numerals, and (4) volume dials shall be calibrated to render changes in intensity by five decibel steps or less, the decibel being designated as the accepted unit of volume.

The most widely used audiometers are those in which pitch changes are presented in discrete steps conforming to the standards just mentioned. The apparatus can be connected to 110-volt alternating current outlets and is equipped with several accessories. Among these are the speech-input microphone used to determine the individual's impairment for speech-hearing as contrasted with his loss for pure tones; a bone-conduction vibrator which can be held to the mastoid process for the purpose of measuring bone-conduction hearing ability; and a push-button signal-light cord by which the patient can indicate whether or not he hears the tones. One of the most important devices is the tone interrupter which enables the audiometrist to cut off the tone without making any ostensible movement.

On the volume dial is calibrated increases in volume in terms of decibels. A person with normal hearing would hear each tone at zero which is the volume established for the normal threshold; but when the volume is turned up to the necessary level for a person with hearing-loss, his threshold can be located and the dial figures read in terms of decibel loss.

The type of audiometer just described is used to give individual tests after which a hearing-loss curve is plotted through the points located as thresholds for each tone. This is the audiogram, forms for which are made up by the audiometer manufacturers.

The 4–A audiometer for group testing is widely used in schools to screen out hard-of-hearing children for individual testing. This audiometer consists of various numbers of earphones fed by an electric phonograph. From a recording the entire group hears a series of numbers spoken with diminishing intensity. The subjects write the numbers they hear until their ears begin to fail them. The test is carried out for each ear separately, and the results are used to segregate the ones which need further testing. The obvious advantage of such a device is that it makes possible the simultaneous testing of 40 school children in 30 minutes.

The Use of the Audiometer

In administering the audiometer test the problem is to locate the point at which the patient can just detect the presence of the tone. Errors of expectancy and habituation may enter in unless precautions are taken. That is, the patient may report that he hears the tone because he expects to hear it, or he may report that he continues to hear it because he has been hearing it. The use of the tone interrupter eliminates the possibility of such errors. With one hand on the volume control and the other on the tone interrupter, the tester can be certain that the tone is really heard. The patient is told to press the signal-light button each time he hears the tone and to release it when he hears nothing. When the patient's signals coincide with the pattern of tone interruption, it will be evident enough that his responses are accurate.

The tone should be presented at an audible level first, then interrupted and presented again after a reduction in intensity. This process continues until the faintest tone the patient can hear has been found at a given pitch level. The frequency 1,024 cycles is probably the best tone with which to begin the test since at this level there is less variation in response among patients tested.

If accurate results are to be obtained, testing must be done in a very quiet or sound-proof room. This is true because the apparent threshold of a patient under noisy conditions will be the point at which the tone masks the room noise instead of the point at which the tone is just audible to his ear. Unless complete quiet is established, it is doubtful whether bone-conduction tests can be carried on at all.

It is very difficult to test children under six years of age because they are usually too immature to center attention for any length of time on the stimulus tone. With very young children the test is presented as a game in which the tone is called a "train whistle" or "bird" and the like. Testing procedure may require several sittings in order to find hearing acuity for each of the tones. One problem encountered is training the child to give a signal indicating that he hears the tone. Since the light signal is too complicated for him, he may be asked to raise his hand or give a verbal response. The audiometrist may help focus the child's attention by appearing to be listening for the tone himself with the appropriate facial expression. In some cases, the change of expression from blankness to a smile on the part of the child may give the only clue as to whether he hears the tone or not.

Not to be overlooked is the important element of relaxation on the part of the patient if accuracy is to be had. An arm rest should be provided so that fatigue does not result from tensely holding the earphone to the ear.

Audiogram Analysis

The audiogram is a graphic representation of the amount and character of deafness in terms of decibel-loss in each tonal area. This information may be employed to determine percentage of hearing loss, to select a hearing aid, or to differentiate the type of deafness an individual has.

For all practical purposes the main concern of the audiometrist is for these five frequencies: 256, 512, 1024, 2048, and 4096 cycles per second. These four octaves comprise almost 100 per cent of the entire range of tones heard in speech. The Council on Physical Therapy which set up audiometer standards has formulated a tentative, though widely accepted, method of calculating percentage of hearing loss. It is superior to any of the older methods. Each of the four octaves is weighted as to its relative importance for speech. The hearing disability tables published by the American Medical Association show that the octave, 256–512 accounts for 15 per cent of our speech sounds; 512–1024, 30 per cent; 1024–2048, 35 per cent; and 2048–4096, 20 per cent. This means that a hearing loss in the range 512–1024 cycles would be more disabling than a loss of the same degree would be in the octave 256–512.

Each five-decibel step is given a definite weight in each octave, since the limits of hearing for the normal ear occur at different intensity levels for each frequency. By plotting the curve from the threshold point obtained in testing, the percentage of hearing loss can be figured for each ear. The binaural percentage of loss can then be calculated in this manner: The percentage value of the better ear is given seven times the importance of the poorer ear; by multiplying the better ear value by seven, adding one times the value of the poorer ear, and dividing the sum by eight the combined percentage of hearing loss is obtained.

Transparent calculators are available which can be superimposed on the audiogram showing percentage losses to be assigned to each decibel level in each octave.

Since the sole purpose of a hearing aid is to amplify sounds, it is important to know in any given case which sounds need amplifying. Hearing aids differ widely in their amplification characteristics; for this reason they must be "fitted." The audiogram serves an essential purpose in determining the type of hearing aid required.

When the audiogram shows definite depreciation of hearing acuity in the lower part only of the tone scale and is verified by a negative Rinné test, a defect in the conducting mechanism of the ear is diagnosed. When the upper tone scale shows definite hearing loss and is verified by a positive Rinné test, perception or nerve deafness is indicated. When both the upper and lower tone range shows definite hearing loss and the middle of the curve extends upward, otosclerosis or progressive deafness is registered.

A diagnosis of hearing loss should never depend upon one single audiogram. In order to eliminate the possibility of error it is necessary to obtain several for the purpose of securing agreement.

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K. S. W.

HEARING DATA, USE OF

Interpretations of Measurements of Auditory Threshold

The vocational guidance expert need not be personally acquainted with the techniques of administering hearing tests as outlined in a previous chapter, but he should be able to judge the value of the results from a particular test, and in the case of a satisfactory test he should be able to interpret results in terms of the occupation he is considering.

The classical methods of testing hearing are practically obsolete. Research has shown that the variability of such relatively uncontrolled tests as the tuning fork, watch tick, coin click, and spoken and whispered voice, are of almost no value for the correct placing of a person's hearing. Certain of these tests may be valuable from a clinical point of view, but this value is of no concern to us here. Three satisfactory tests of hearing are becoming more and more widespread:

1. The pure tone audiometer, an instrument which generates pure tones over a wide range of frequencies. Pure tones are used because of the fact that many ears hear certain frequencies very well, but other frequencies very poorly. A person may have good high-tone hearing but poor low-tone hearing, or the reverse. Hence a number of frequencies must be tested in order to determine the over-all functional efficiency of an ear. For any frequency, the subject is required to indicate the lowest intensity he can hear. Usually the frequencies selected are the octaves from 256 cycles per second (Middle C on the piano keyboard) to 8192 c.p.s.

In order to protect the legal rights of a person entering an occupation possibly injurious to the ear, an audiogram should in all such cases be provided. Hearing may be damaged to some extent, but not sufficiently to be detected by the usual coarse test. The audiogram will detect the least damage. Moreover, hearing may be damaged for certain frequencies but not for others, and the undamaged frequencies may be sufficient for the patient to pass the usual hearing test and the loss go undetected. Yet even this loss is a matter for compensation as it may lead to later disturbances of hearing. Only the audiogram will uncover this state of affairs. Without a previous audiogram the person cannot claim the hearing loss was occasioned by that occupation. On the other hand, the employing company is protected by an early audiogram, since otherwise an employee could claim compensation for a hearing deficit which may have existed before the work but was undetected.

2. Voice tests; where all that is desired is an estimate of a man's ability to understand speech, no better test can be devised than the use of the human voice. However, for accurate, usable results, the voice intensity must be regulated by means of certain apparatus. The most common form is the Western Electric Phonograph Audiometer test, consisting of digits which grow weaker and

TABLE I

CONVERSION TABLE FOR SCORES OF SPEECH INTELLIGIBILITY

General Classification	Percentage Hearing Loss for Speech [1]	Average Audiogram Loss in Decibels at 512, 1024, and 2048 c.p.s.	Decibel Loss Below Normal Level of Speech [2]	Spoken Voice Distance-Fraction [3]	Whispered Voice Distance-Fraction [4]
Normal or Near-Normal	0	0	0	15/15	no reliable data
	1–9	7	6	15/15	
	10–19	17	16	14/15	15/15
Somewhat hard of hearing	20–29	30	26	10/15	7/15
	30–39	42	36	6/15	3/15
Needs hearing aid for effective social intercourse	40–49	52	46	4/15	.5/15
	50–59	65	56	3/15	no reliable data
	60–69	77	64	1/15	
	70–79	no reliable data	74	.75/15	
	80–89		80	.5/15	
	90–99			0/15	
	100	Each column independently calculated.			

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[1] Calculated from audiogram by American Medical Association method of computing percentage loss.

[2] Data from phonograph voice test and monitored voice test: both tests give similar results.

[3] Data adapted from Fowler, E. P., Sr., Hearing Standards for acceptance, disability rating and discharge in the military services and in industry. *Laryngoscope,* 1941, 51, 937–956.

[4] No scores can be obtained representing loss of less than 20 db in the usual testing situation with a noise level of 20—30 db as found in the usual testing alley.

weaker in intensity as the record progresses. The subject is required to write down as many digits as he can hear. Fairly satisfactory results are obtained with this equipment; standards of hearing have been collected on many thousands of ears. The interpretation of results from this test can be made by the vocational counselor from the data which is printed on the score card. Subjects are labelled normal, somewhat below normal, or in need of a hearing aid. The counselor can judge at once how well the subject will perform in an occupation demanding good speech intelligibility.

3. In a few places the intensity of the voice is governed by means of a voice level monitoring system. This is true for the large Army and Navy aural rehabilitation centers. The tester speaks into a microphone leading to the subject's loudspeaker, and keeps his voice at a constant level by watching an output voltmeter. The speech is then lowered in intensity by inserting more and more resistance into the electronic circuit. The level is found at which subjects with known normal hearing as tested by the audiogram can hear speech. Subjects with defective hearing are described as so many intensity units below this standard level. Very accurate placement of hearing ability can be made. The results for any subject will be in terms of decibels below the normal level. The counselor can interpret these figures in more conventional terms as described in Table I and in the next paragraph.

In order to conform to medical and legal practice, it is necessary to speak of hearing disability in terms of percentage loss. Scores from a phonograph test or a monitored voice test should be converted into percentage hearing loss before interpretation is made. Also, many doctors report scores in terms of a fraction of which the denominator is the distance in feet at which a normal ear can just hear the sound used, the numerator is the distance at which a deafened ear can hear that sound. Thus, a score on a voice test of 10/15 means that that ear must be within 10 feet of a voice which a normal ear can hear at 15 feet. This distance-fraction must also be converted into percentage hearing loss.

Some of these relationships are described in Table I. In the first column is found a classification of hearing in everyday terms. The second column presents percentage hearing loss for speech calculated from the pure-tone audiogram according to the method recommended by the American Medical Association. Column 3 presents the average loss in decibels as determined by the audiometer for the speech range of 512–2048 c.p.s. The counselor can quickly compute this value when faced with the problem of interpreting an audiogram; the average loss thus computed may be translated into percentage hearing loss by comparing the figure with column 2 of Table I.

Column 4 presents the loss in hearing of actual speech, either monitored or by phonograph. A defective ear is said to function at levels so many decibels (a unit of intensity) worse than normal ears. Table I directly translates decibel loss into percentage hearing loss.

Columns 5 and 6 represent the usual relatively uncontrolled clinical tests using the actual voice. The bottom figure of the distance-fraction is the distance at which a normal ear can just hear speech, and the top figure is the distance at which the defective ear can just hear that same speech. Table I translates these data into other terms.

Levels of Hearing for Speech Intelligibility

1. Necessity for understanding the human voice. It is generally considered that a person whose loss is greater than 30% in the better ear should be referred for the fitting of a hearing aid. An individual deafened by 30% may be brought to a perfectly normal level with a well-fitted instrument.

2. In order to hear subdued conversation in a quiet room, an ear must have no worse than 15% loss. A person worse than this will miss 25% or more of speech sounds and will occasionally be forced to request a sentence repeated.

3. For those occupations demanding excellent conversational intelligibility (for example, physicians, undertakers) hearing should be at least within 5% of normal.

It may be thought that these standards are somewhat stringent, but it must be remembered that the pathology of deafness is almost invariably progressive, such that a person with a 15% loss in childhood, although undetected at that time, will almost certainly grow worse and ultimately require a hearing aid.

Loudness Levels and Masking

The problem of auditory functioning is complicated by the fact that an ear may perform poorly at low loudness levels, but if the loudness level be increased, the ear may function as well as a perfectly normal ear. For example, a person may be defective in understanding the whispered voice, yet be perfectly capable of understanding conversations at higher intensities. Another complication arises from the fact that ears differ in their ability to function under high background noise masking. Consequently, in occupations where speech is at loud levels or where masking noise is presented, certain tests in addition to a threshold measurement must be made. Occupations where these factors are of particular importance, are many of those involving communication systems where a high degree of noise and distortion is present in the equipment, divers, radiomen, telegraph and telephone operators, and aircrew men. In order to test these abilities, it is necessary either to provide a hearing examination under the actual conditions of the job in question or some very similar hearing test. One test available is a phonograph record test consisting of words spoken in a background noise, the latter reproduces the noise spectrum in the cabin of a B24 bomber. If a person can score average or better on this test, the likelihood is that he can overcome masking and distortion satisfactorily on the job. This test is available as Auditory Test No. 12, Psycho-Acoustic Laboratory, Harvard University. The interpretation of the test must be in terms of a group of men successful in the performance of the job in question.

Pitch and Loudness Discrimination

There are certain occupations where the quite specialized auditory functions of pitch discrimination and loudness discrimination are of some importance. For example, mechanics pay considerable attention to slight differences in the noise produced by machinery, and, for determining these changes, at least average discriminatory ability must be present. In piloting a small airplane, there are certain maneuvers in which attention to motor noise, slip-stream sounds, and the noise of certain rigging may be significant.

There are certain indications from recent research that speech intelligibility is related to good pitch and loudness discrimination. As yet, however, the Bell Telephone Laboratories have not published their results in final form.

There are certain occupations in which good pitch discrimination is a primary requisite—these include mine sweeping, operation of sound detection gear, the use of the expendable radio sonic buoy, and piano tuning. For these occupations, the man should stand well up on the test.

Other Auditory Functions

Certain other auditory functions are present and distinguishable by common tests and must be taken into account particularly for the playing of musical instruments. For this purpose a very reliable and well validated series of records is available and should be used much more widely than is commonly the case.

Interpretative Responses

The six primary musical abilities which have so far been distinguished are the discrimination of pitch, loudness, time, timbre, rhythm, and tonal memory. Each of these abilities can be tested with a single phonograph record by means of the Seashore Measures of Musical Talent. These records have been standardized on many hundreds of children so that adequate interpretative statistics are available. These records are obtainable at any good music store and require only a slight amount of instruction to administer. Scores are made a matter of record for all the children of many school systems in this country. It is not possible to say from a low score on one or two of these tests that a child will make a poor musician, since an individual may compensate in a surprising number of ways for deficiency in one function; but it is possible to say that if a person's score is above average on these tests he has the fundamental auditory abilities for good musicianship, other things being equal.

Two forms of this test are available: Form A—a relatively coarse screening test applicable for group testing and Form B—in which the items are more difficult than in Form A and consequently provide a finer check on the subject's ability. Form B is arranged for individual administration only.

In counseling anyone with regard to music as a profession or even as a serious hobby results of the Seashore Measures should certainly not be overlooked.

The Use of Residual Hearing

In counseling an individual with deafened hearing it is not necessary to adopt a pessimistic or defeatist attitude. In the first place there is only a small fraction of individuals who are so deaf that no improvement can be effected by a properly fitted hearing aid. Modern electronic methods have already advanced and will advance still further, to the point where a perfectly normal existence is possible for those for whom nothing could be done 5 years ago. For these individuals it would not be justified to suggest that they refrain from considering certain occupations for which they are otherwise fitted by ability and training. Indeed, with an appropriate aid, the learning of lip reading by the new methods, and by compensation in a variety of ways, seriously deafened individuals are today leading normal lives, the majority of their acquaintances unaware of the extent of their deficiency.

A false impression can easily be gained by the counselor of the ability of the deafened individual to succeed in jobs where normal hearing is required. Many of these individuals have negativistic tendencies, anti-social trends, and regressive behaviors as a result of their auditory deficiency, all of which may be quite unjustified and much of which may be remedied. Recent experience has shown that the social rehabilitation of the auditory defective is at least as important if not more important than restoring his hearing by artificial aid. Many individuals properly fitted with aids are still unsuccessful persons because their earlier acquired habits have not been replaced with correct social responses. Yet it is possible with enlightened instruction and assistance for these unfortunate tendencies to be overcome and for the individual to learn to enter into a new phase of living on the basis of a sense of accomplishment in overcoming a defect, and finally on the basis of establishing security in a good job and security in the acceptance and affection of his fellows.

J. D. H.

HEART AND CIRCULATORY DISORDERS. Problems of restoring cardiac patients to suitable employment are many and complex. These problems are more important today than ever before in the history of our nation. Out of every 100 men examined for military service four were disqualified because of heart defects. In 1944 a sub-committee of the House Committee on Labor reported that persons with cardiac disorders numbered approximately 3,700,000, or about 15 per cent of the physically handicapped persons in the United States. However, the percentage of cardiac cases among the handicapped persons being served by state rehabilitation agencies is only about 3 per cent. This apparent neglect in the rehabilitation of cardiac patients is due, in part, to three reasons:

1. The public still has an unjustified and pessimistic association of heart disease with economic incapacity, invalidism, and sudden death. This is a carry-over from a generation ago when much less was known about heart disease.
2. Lay persons have had the misconception that cardiac disease affects, primarily, persons of middle or advanced age. According to the United States Public Health Service, in about 75 per cent of all cardiac cases, the disease developed before the age of ten. Nearly 90 per cent of all heart disease in children is due to rheumatic fever. Most heart cases needing rehabilitation service are of this type. This group is also the one for which the best prognosis generally can be given.

3. The majority of persons who have heart disorders are not informed of medical and vocational rehabilitation services that are available in every state. There is need for a more extensive educational and cooperative program involving the combined efforts of heart associations, referral agencies, and the joint participation in individual cases of the family physician, the cardiologist, the vocational rehabilitation worker, and the employer.

Medical Information and Classification

From the point of view of the rehabilitation worker, the best explanations of the anatomy and physiology of the heart, and of the diseases and irregularities of the heart, arteries, and veins are found in the Federal Security Agency's publication: Medical Information for Vocational Rehabilitation Officers (Vocational Rehabilitation Series, Bulletin Number 27).

Complete medical information is of utmost importance—information is needed from the general medical examination concerning all other defects besides those reported by the heart specialist. The standards for examination and classification adopted by the American Heart Association should be followed. Functional and therapeutic classifications are given below.

It is necessary to establish whether the heart disability is organic or functional. A great many persons who think that they have organic heart disease do not have it. Organic heart disorders may be rheumatic, hypertensive, coronary, syphilitic, congenital, or other heart irregularity. It is not enough to know that a person has had rheumatic heart disease, or that he has had mitral stenosis or mitral insufficiency, because each individual case varies. It is important, therefore, that we not only know the organic condition of the patient, but that we also know the functional and therapeutic classifications.

The functional classification is made by the physician after he has ascertained the symptoms of the patient and has considered the medical history of the case as well as evaluating the patient's functional capacity and responses. It is the patient's own story of his own particular response to his own physical effort.

The therapeutic classification listed below represents not what the patient is able to do, but what the cardiologist, from consideration of the nature of the patient's disease and the amount of anatomical change in him, has decided is proper for the patient in the way of physical effort.

Functional Capacity

Class I. Patients with cardiac disease and no limitation of physical activity.
Ordinary physical activity does not cause discomfort.

Class II. Patients with cardiac disease and slight limitation of physical activity.
They are comfortable at rest but on ordinary physical exertion experience discomfort in the form of undue fatigue, palpitation, dyspnea or anginal pain.

Class III. Patients with cardiac disease and marked limitation of physical activity.
They are comfortable at rest but the above symptoms are caused by less than ordinary activity.

Class IV. Patients with cardiac disease who are unable to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency, or of the anginal syndrome, are present, even at rest.

Therapeutic Classification

Class A. Patients with cardiac disease whose physical activity need not be restricted.

Class B. Patients with cardiac disease whose ordinary physical activity need not be restricted, but who should be advised against unusually severe or competitive efforts.

Class C. Patients with cardiac disease whose ordinary physical activity should be moderately restricted, and whose more strenuous habitual efforts should be discontinued.

Class D. Patients with cardiac disease whose ordinary physical activity should be markedly restricted.

Class E. Patients with cardiac disease who should be at complete rest, confined to bed or chair.

Potential Heart Disease

Patients in whom no cardiac disease is discovered, but whose course should be followed by periodic examinations because of the presence or history of an etiological factor which might cause heart disease.

Possible Heart Disease

Patients with symptoms or signs referable to the heart but in whom a diagnosis of cardiac disease is uncertain.

In determining the therapeutic classification, the examination is directed to bring out sufficient symptomatology to enable the Cardiologist to visualize the extent of the patient's ability or inability to engage in ordinary physical activities. Standard data such as the following should be shown:

> The pulse rate at rest, in a recumbent, and in a standing position; pulse rate immediately after a 50-hop exercise, and 2 minutes after the completion of such exercise; the systolic, diastolic, and pulse pressure, before the exercise and after its completion; the area of heart dullness; the presence of cardiac arrhythmia, thrills, or murmurs; the transmission of the murmur, and how it is affected by change of posture, exercise, or phase of the respiratory cycle; degree of respiratory embarrassment at rest and after exercise. Diagnosis must be confirmed by modern clinical and laboratory methods.

Prognosis

In considering the work capacity of a cardiac, it is desirable to know the prognosis as well as the diagnosis and classification.

As stated in "Medical Information for Vocational Rehabilitation Officers," the work capacity of a patient depends far more on the strength or weakness of the heart muscle—than on anything else. The valvular damage must also be considered. In uncomplicated cases of mitral insufficiency of moderate degree, there is little danger of sudden cardiac failure; life expectancy may be good and physical activity normal. In mitral stenosis there is little danger of sudden termination of life, though the life span is usually shortened. In aortic disease, the occupational prospects depend somewhat on the cause of the disease. In the case of lesions, due to rheumatic fever or chorea, the prospects are far more favorable than in the case of those due to hardening of the arteries or to syphilitic involvement. The former may be expected to be static, while the latter is progressive, at least slowly.

In the prognosis for *rheumatic heart disease,* the presence of an active subacute rheumatic fever is more significant than the type or even the degree of mechanical damage. Although the mortality for rheumatic fever is not high, unless the heart has been seriously damaged, the ultimate prognosis is serious. Because of the tendency for rheumatic cases to suffer subsequent attacks in each of which the heart sustains additional damage, the life expectancy of young adults with rheumatic hearts is less than normal.

In *hypertensive heart disease,* important factors in the prognosis are the extent of permanent damage to the small arteries and the age at which the disease develops. As a general rule, the prognosis is not good if it develops in childhood or young adulthood, since an early onset implies constitutional vulnerability to the disease. In the initial stage, when there is no change in the arterial system and the heart is unaffected, the prognosis is very good. Frequently this type of defect is discovered coincidentally with examination for some other disability.

Persons with *cardiovascular syphilis* are considered the least satisfactory of all the cardiac diseases from the standpoint of carrying on successfully in occupational activities. Statistics of the Civil Service Commission indicate that this defect has a high incidence in the laboring classes and in most instances incapacitates to the extent where vocational training and placement are difficult. The prognosis of the disease is guarded.

Persons with a history of *coronary disease* manifested by angina pectoris, coronary thrombosis, cardiac asthma or paroxysmal dyspnea usually have severe limitations imposed on their activities. Prognosis, either with or without acute attacks, depends not only upon the condition of the heart but upon the damage to the arteries elsewhere in the body, especially in the brain and the kidneys. Studies by various cardiologists indicate that not more than 15 per cent of persons who have suffered attacks of angina pectoris or coronary occlusion live more than 10 years.

Diseases of the Arteries and Veins

Other cardiovascular diseases include those that affect the arteries and veins and interfere with proper circulation and thereby affect work capacity:

1. Severe *varicose veins* may require a job change or preparation for employment not calling for activities such as standing, walking, and climbing.
2. Work limitations of *phlebitis* are similar to those of varicose veins.
3. In cases of *thrombo-angiitis obliterans* (Buerger's disease) there are usually physical limitations due to pain and amputations. Treatment to check the disease is important, as well as medical advice concerning physical activities and the use of artificial appliances. Otherwise, minor and then major amputations may become necessary.

Hospital Rehabilitation Program

Successful rehabilitation programs are dependent upon the availability of modern, well-conducted hospitals. Such a hospital is really a rehabilitation center. It brings to the patients medical diagnosis; medical, surgical and psychiatric treatment; medical social work; vocational counseling; physio-therapy; occupational therapy; training and re-training activities; and prosthetic appliances —all the skills that are required for the restoration of the patient. Physicians with experience in the Armed Forces—Army and Navy Rehabilitation Programs—emphasize again and again the importance of a hospital atmosphere which surrounds the patient, and refer to the tremendous up-lift which the patient gets from the early knowledge of a specific objective that the doctor and the rehabilitation counselor have planned with him as an individual.

Hospital and institutional rehabilitation programs for cardiac patients should include, in addition to medical diagnosis and treatment, rehabilitation services involving the coordination of activities of the vocational counselor, the occupational therapist, instructors of shop and educational courses, and case workers. When the patient desires, and is able to profit from vocational counseling, there should be an exchange of educational, psychological, occupational and employment information with the patient as a basis for:

(a) A better understanding of himself, his occupational interests, aptitudes, and limitations.
(b) A better understanding of physical demands and other specific job requirements.
(c) His decision concerning his vocational and education aims and needs.
(d) His determination to play a major part in his own physical and vocational rehabilitation in best utilizing services available to him in the hospital.

When approved by the physician, occupational therapy, shop training or educational courses should be arranged for interested patients to help effect their social, emotional and vocational adjustment. Constructive activities should improve morale, help the patient to be receptive to treatment, and thereby decrease the length of time needed for medical treatment.

At Therapy Conferences held by the professional staff, recommendations should be made as to the patient's physical ability and psychological readiness for vocational planning, training or employment, and the number of hours that may be devoted to his vocational rehabilitation activities. The hospital rehabilitation program should be built around the PATIENT—what he is, what he does, the benefits he receives, and his hopes for his future when he leaves.

The counseling and case work approach to rehabilitation of cardiac patients is the same as for other types of handicapped cases. All factors, physical, personal, educational, experience, interests, aptitudes, and temperament of the individual, should be carefully analyzed.

It is important for the worker to realize in counseling cardiac patients that fear, worry and mental strain, coming from the knowledge of the disability, frequently produce more detrimental and debilitating effects than the condition itself. The worker should be on the alert in counseling these cases to find out whether hidden or undue worries of this nature exist, and to see that the patient gets the necessary help to eliminate them.

Aside from emotional states that arise from a fear of heart disease, some authorities claim that there is also a personality factor related to cardiac pathology. Persons with hypertensive disease may have similar personality patterns, characterized by activeness, aggressiveness, and enthusiasm. Hypertension may, but rarely does, occur in indolent or phlegmatic personalities. Because of his propensity for action, the hypertensive person recoils from concentration and continued thought. Under the effort of sustained mental work he becomes fatigued and exhibits a shortened, explosive temper. It will be helpful for the counselor to be aware of this type of personality and to assist the patient in selecting a job objective that does not require too much concentration and fixed attention. Also, because of the patient's propensity toward activity and aggressiveness, it is important to avoid the selection of job objectives that may be too strenuous.

The rehabilitation office should have the responsibility of coordinating that part of the vocational program completed at the hospital, or institution, with the training to be continued, or started, by the patient after he is discharged.

Rehabilitation services, both in and out of the hospital, vary according to the individual differences of each patient. There is need, therefore, of a discriminate selection of services based on medical recommendations, and coordination and direction of these services toward the definite objective of restoring the veteran to the fullest physical, mental, vocational and economic usefulness of which he is capable and for which he is eligible.

Employment of Persons with Heart Disorders

Physicians tell us that individuals with the major types of heart disease can perform moderate types of work without materially impairing their health or shortening their lives. In the majority of these cases, moderate physical effort appears to play little or no part in the progress of the heart disease, nor does it seem to be a cause of heart failure. Assuming that an adult with heart disease can expect a less-than-normal life span, the vocational needs of such an individual should not be neglected merely because his life expectancy may be 15 or 20 years rather than 30 or 40 years. Where precautions are taken in selecting suitable employment for which the patient is adequately prepared, the odds are greatly in favor of steady employment over a period of years.

The capacity for work of a person with heart disease depends not only upon the type and severity of his condition, as related to the physical demands of the job, but also upon the type of heart disease he has and upon his attitude toward work and other related activities.

Many job surveys have been made by federal agencies, including the War Manpower Commission, Civil Service Commissions, Department of Labor and Office of Vocational Rehabilitation, of jobs suitable for various types of handicapped persons. These surveys indicate the physical and environmental limitations that should be considered for handicapped applicants, including cardiac cases. These limitations include the physical activities required on each job, such as walking, climbing, bending, reaching, lifting, carrying, pushing, pulling, etc., together with the study of working conditions of the job, such as ventilation, dampness, mechanical hazards, temperature, etc. It is understood that positions which involve the use of machinery, and which are not under control, would endanger life or property, and are types of work which should be avoided for cardiac employees.

In view of the fact that cardiacs should avoid anxiety, worry, and irritation of the kind that may arise in hazardous or unpleasant working conditions, they should stay away from mechanical and electrical hazards, toxic fumes, explosives, exposure to burns and dusty occupations (at least for mitral cases, as they induce coughs and catarrh, so favoring bronchial congestion to which these persons are particularly disposed). Clients with lesions of the aortic valve are often liable to transient attacks of giddiness and fainting, ruling out trades that involve climbing ladders or working at high altitude, or with machinery. Work which places a fairly heavy strain on the lower extremities can be more easily tolerated than that in which the main strain is on the arms. Job studies should include analysis of the time and transportation to and from the jobs, and the presence or absence of elevators at the place of employment, motions required on the job, posture of the worker, speed and salary on piece work or hourly rate. It is for the industrial physician at the place of employment to indicate, on the worker's certificate, duties that should be banned, such as lifting in excess of a certain number of pounds, standing all day, climbing ladders, walking to the supply room, etc.

With the use of expert services and scientific methods, many thousands suffering from functional heart conditions or cardiovascular diseases now doomed to useless and forlorn types of existence, can be returned to useful and economically productive living. No matter how serious the handicap, services that lead to even part-time employment or to remunerative activities in supervised, sheltered work shops or homes, pay dividends, not only in humanitarian terms, but in dollars and cents.

Objective information concerning the individual's interests, aptitudes, abilities and limitations, together with knowledge of job requirements and opportunities, should enable the patient to make an intelligent decision concerning his vocational and educational aims and needs. When he is adequately prepared for suitable employment, his physical or mental limitations are irrelevant insofar as the requirements for the particular job are concerned.

Occupations for the Cardiac

The following list of jobs by major occupational groups indicate positions for which cardiac patients have been successfully employed:

1. Professional Occupations: Accountants and auditors; architects, artists, sculptors and teachers of art; authors and editors; chemists, assayers, and metallurgists; engineers; librarians; pharmacists; social workers; statisticians; teachers, instructor and others.

2. Semiprofessional Occupations: Decorators, commercial artists; designers, draftsmen; laboratory technicians; photographers; and radio operators.

3. Managerial and Official Occupations: Inspectors, managerial and official; advertising agents; credit men; purchasing agents and buyers; public service inspectors.

4. Clerical and Sales Occupations: Bookkeepers; checkers; clerks; library assistants and attendants, office machine operators; paymasters, pay roll clerks and timekeepers; statistical clerks and compilers; stenographers and typists; telephone operators; weighers; salesmen; sales clerks.

5. Service Occupations: Bartenders, waiters and waitresses; barbers, beauticians and manicurists; attendants, recreational, amuse-

ment, and personal service; ushers; guards; elevator operators and others.

6. Agricultural, Fishery and Kindred Occupations: Poultry farmers; farm hands, poultry; farm managers and foremen; nursery operators and flower growers; hatchery men.

7. Skilled Occupations: Bench hand, candy maker, tobacco sample inspector, knitting-machine operator (light), tailor, bushelman, garment inspector, compositor, linotype operator, engraver, lithographic designer, leather worker, jewelry repairman, watchmaker, machine-maintenance man, electrician, piano tuner, bench carpenter, painter, dry cleaner, spotter, dyer, wheel-alignment mechanic, generator man, ignition man, automobile inspector and trouble shooter, household appliance serviceman, office-machine serviceman, musical instrument repairman, electrical repairman, radio technician, meter repairman, gunsmith, locksmith, camera repairman, photographic processer, storage battery repairman, bookbinder, embosser, leather sorter and many others.

8. Semiskilled Occupations: Semiskilled occupations include the performance, to a limited extent, of part of the skilled occupations listed above. Others include: Occupations in the production of beverages; canning; preserving foods; mixing and miscellaneous processing; production of confections; manufacture of chewing gum; processing of dairy products; production of corn syrup and corn sugar; poultry processing; production of miscellaneous food products; manufacture of tobacco products; production of textiles, including knit goods, spinning, twisting, winding, reeling and spooling, bleaching, warping, sizing, drying, folding, measuring, shrinking, inspecting; occupations in the manufacture of artificial leather, carpets and rugs, felt goods, linoleum, nets, etc.; manufacture of fabricated textiles, including fur goods, hats, caps, trimmers, blockers, pressers, stiffeners, graders, sorters, decorators, brim-shapers, dress makers, etc.; manufacture of furniture and the production of paper and paper goods; also chemicals and chemical products; rubber and leather goods; metal working occupations; manufacture of electrical equipment; manufacture of miscellaneous products to include optical goods, plastic products, artificial flowers, umbrellas, brushes, etc.; transportation occupations, including route men, train callers, dispatchers, gas and oil men, etc.; other occupations include communications, trade and service; and miscellaneous occupations, such as packing, filling, labeling, bottling, bundling, wrapping, inspecting, store-keeping, and many kinds of apprentices.

9. Unskilled Occupations: This group includes manual occupations that involve the performance of simple duties and may be

learned within a short period of time. These occupations vary from those involving a minimum of physical exertion to those not suitable for cardiac cases due to the amount of heavy physical work entailed.

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In approving this manuscript for publication, The Department of Medicine and Surgery of the Veterans Administration assumes no responsibility for the opinions expressed or the conclusions drawn.

F. R. S.

HIGH SCHOOL. Since most Americans do not attend higher institutions of learning, and since most vocational decisions (both of the tentative and final types) are reached at the high school level, occupational guidance is and must remain primarily a secondary school function. This is recognized in the abundance of guidance books, tests and other materials directed to high school students, particularly seniors. It is regrettable that more emphasis has not been placed upon counseling at the earlier years of the high school curriculum. Although occupational guidance activities are more widespread at the secondary school level than ever before, most institutions do not have adequate programs at the present time. More attention has been given to group techniques than to the employment of individual counseling procedures. This is partly due to the lack of trained personnel.

Vocational selection at the high school level has much in common with guidance at other levels and the basic techniques and procedures are often very similar. There should, of course, be close articulation between the program of the high school and activities in the junior high school, college, and the world of work. The reader is referred to the articles in this Encyclopedia dealing with minors, vocational high schools, high school classes in occupations, history of high school guidance, and to dozens of other articles which deal with the numerous problems encountered in secondary school counseling.

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O. J. K.

HIGH SCHOOL GUIDANCE, HISTORY OF. Frank Parsons is credited with originating the term "vocational guidance." He was a volunteer worker in Civic Service House in Boston. His major contacts were with out-of-school youth. Many of these he found to be ill-adjusted to their work and to lack a basic foundation for building a career. For these, in 1905–06, he organized "The Breadwinners Institute." He stated the aims of the Institute to be:

> "To offer young men and women who are wage earners, the elements of a broad culture and careful training necessary for career building . . . an effort will be made to discover and develop the special endowments of each individual."

His experiences with these young people led him in 1908 to organize the Vocational Bureau of Boston which was made possible by funds provided by interested citizens. In his first report to the Directors, dated May 1, 1908, he used the term "Vocational Guidance." This is said to be the first time on record the term was so used. His official title was "Director and Vocational Counselor." It is likely that this was the first time on record that "Vocational Counselor" was used. The connection in which the term "vocational guidance" was used follows:

> "In order to cover the field in the most complete and competent manner the work should become a part of the public-school system in every community, with experts as carefully trained in the ART of Vocational Guidance as men are now trained in Medicine and in Law."

The aim of the Vocational Bureau as stated by Parsons was:

> "To help young people in choosing an occupation, preparing themselves for it, finding an opening in it, and building up a career of efficiency and success."

More recently, Vocational Guidance has been defined as:

"The process of assisting the individual to choose an occupation, prepare for it, enter upon and progress in it. It is concerned primarily with helping individuals make decisions and choices involved in planning a future and building a career, decisions and choices necessary in effecting satisfactory vocational adjustments. The term 'vocational' applies to all gainful occupations, including professions, as listed in the United States Census of Occupations and Homemaking."

("Revision of Principles and Practices of Educational and Vocational Guidance"—*Occupations—The Vocational Guidance Magazine*, May 1937.)

It is thus clear that the definition given above is but a development of Parsons' original concept.

The essentials for vocational choice as stated by Parsons were:

(1) A clear understanding of yourself;
(2) A knowledge of the conditions and requirements of success in different lines of work;
(3) True reasoning on the relations of these two groups of facts.

Although Parsons was not connected with the public-schools, he was contacting young people coming recently from school and was thus aware of many cases of unadjustment to their work and environment. This led him to urge the need for vocational counseling in the schools. The necessary vocational advisement he believed should include:

(1) Assistance in making self-analysis;
(2) Giving information concerning vocations and conditions for success therein as basic to wise vocational choice.
(3) This assistance should be given by carefully trained experts.

Eli Weaver was a contemporary of Parsons. He was a teacher in the Boys High School, Brooklyn, N. Y. He too was interested in the plight of youth who were leaving school as early as the law permitted (then age 14 years) and went to work to study the cause and, if possible, find a remedy. His early work in this field dates back to 1904. He noted that many of these youths showed considerable promise of school achievement if only they could be kept functioning in school. The most common reason given for this early school leaving was "need to earn." To meet this need Weaver assisted many of these boys to find work on farms in the summer, and in after-school and Saturday jobs in the City during the school year. His aim was to keep them in school "to secure a broad culture and careful training necessary for career building." A comparison of the curriculum of the Boys High School of that time with that of "The Breadwinners Institute" reveals a striking similarity.

Weaver interested some of his fellow teachers in his project and they organized, in 1906, the "Students' Aid Committee of the Boys High School." By 1907 every day and evening high school in the City had a Students' Aid Committee. In order to coordinate the work of these committees on a city-wide basis in 1908 The High School Teachers' Association organized a "Students' Aid Committee" made up of one member from each school committee.

The functions of the Central Committee were (1) to set standards; (2) to outline procedures; (3) to collect and disseminate occupational information; (4) to indicate how and where required education could be secured.

In 1909 the High School Teachers' Association recommended to the Superintendent of Schools that (1) a Central Bureau for Student Aid be established under the Board of Education; (2) that teachers working on the Student's Aid Committees in the various schools be allowed some unassigned time for "vocational guidance."

It is interesting to note in this connection that within a year of the time that "vocational guidance" is said to have been used for the first time in Boston, that the term was apparently adopted by the High Schools Teachers' Association in New York as properly descriptive for the activities of its committee on Students' Aid. A comparison of the scope of the work of the Vocational Bureau in Boston with that being carried on in the schools of New York would seem to justify this adoption of the term.

Before following these two initial movements further it seems wise to examine somewhat certain other movements which were developing at the same time and which were undoubtedly to exert a very considerable influence on "vocational guidance" or to be influenced by it.

First the *Personnel Management Movement*. This movement evolved from certain activities which developed independently in different companies and industries prior to the beginning of World War I. Among these, in addition to "vocational guidance" were "corporation training," "industrial health and safety"—"collective bargaining" mostly outcomes of the movement for "Scientific Management," and all of which had to do with the human element in industry. Scientific Management emerged as an outgrowth of the work of Frederick W. Taylor in the latter part of the last century. In fact in the early days of the movement it was frequently referred to as Taylorism. Taylor's work started with time-and-motion studies as the foundation for "job-analysis" and "man-job-analysis" and Parsons formulas "analyze-yourself" and "analyze the job" may well have been inspired by Taylor's work, which was formally presented for the first time in 1903 before the American Society of Mechanical Engineers. That section of scientific management which had to do specifically with the selection, training, orientation, adjustment, advancement in or separation from the plant, as well as the well-being of the workers came to be designated as Personnel Management and is the counterpart in industry of what vocational guidance was supposed to be in the schools. Both movements are concerned with the same human elements but in different areas. Both have the common aim of fitting the work to the worker. Both have common techniques. Doubtless the trained personnel worker was in Parsons' mind when he specified "experts as carefully trained in the *Art of Vocational Guidance* as men are now trained in medicine and in law." It was doubtless from the personnel departments in industry that Parsons hoped to draw these "experts" for nowhere else did they exist at that time. So closely do these two groups work together, and so much have they in common that the guidance work in the schools has been frequently referred to as "student personnel work." This difference, however, must ever be kept in mind, the personnel man in industry starts with the job and is in search of the best worker for that job—the vocational counselor in the schools is first of all concerned with the child and his potentialities—what he is capable of becoming—encouraging him to aspire to develop his potentialities, and then to direct him to those economic activities where the knowledges and skills he acquires will have the most satisfying outlet—in other words, the best vocation for him. Each is complementary to the other.

Another movement which should be considered here is that of *Cooperative Education*. This is important because it is the laboratory where the vocational counselor and the industrial personnel worker meet and work together on the common problem of selection, orientation, training, adjustment, and development of the worker. This plan of education had its origin in a School of Engineering. Herman Schneider, Dean of the School of Engineering, University of Cincinnati, was the pioneer in this field. Chronologically he was a contemporary of Taylor, Parsons, Weaver. It was an attempt to supplement the theoretical training in engineering by relating the theoretical knowledge which had been gained in school to its application in productive enterprise. The counterpart of the "vocational counselor" in this type of education was called "Coordinator." It was essential that he be as well versed in the industrial phase of the work as he was in the school phase. It was essential that he be as expert in evaluating human potentialities and limitations as was the employment manager with whom he had to cooperate. Both were equally concerned with selection, orientation, adjustment, personal well being, and advancement or transfer of the student-worker. In the operation of this course was found the ideal laboratory for practical vocational guidance.

It is of interest to note that of the four pioneers to whose work we have referred, three were trained engineers, with considerable experience in industrial work. One only had had his principal, almost his entire experience, in secondary education. This may explain any seeming over-emphasis on the scientific phase of vocational guidance. This is pointed out here because other authorities have also called attention to the fact that "as long as humans remain human, human actions cannot be accurately formalized, nor can they be reduced to rigid standards. There can be no substitute for good judgment and common sense."

The reason advanced by the Superintendents in Boston for the inclusion of vocational guidance as a responsibility of the schools of that city was the need of giving children "definite help in choosing a high school curriculum." It was on this basis that the Vocational Bureau was asked for aid and that they responded with assistance, by appointing a full-time Director to cooperate with the schools. The services rendered by this Director was holding conferences, preparing counselors, conducting visits to industries and stores, giving lectures to graduating classes, keeping records of work accomplished, and acting as Clerk to the Committee appointed by the Board of Education to supervise the work. This committee was designated the "Committee on Vocational Direction—sometimes called the Committee on Vocational Advice." It was composed largely of Masters (Principals) of schools. The counselors designated were one teacher selected from each elementary and secondary school in the city. There was no time allowance or additional compensation.

The recommendation made to the Superintendent of Schools in New York City by the High School Teachers' Association, already referred to, were approved by him and passed on to the Board of Education in his 1910 Report to that Body. This immediately called forth several studies on "Vocational Guidance in Its Relation to the Public Schools," only two of which we will refer to briefly. The first study was made by the Public Education Association and the Junior League stated in essence:

> "A system of vocational guidance which would mean the finding of jobs for children under sixteen years of age would not only be futile but dangerously near exploitation since there are no jobs for children under sixteen years of age that are worth while. The kernel of truth in this popular movement for vocational guidance is the need for vocational training. . . . Vocational guidance should mean *guidance for training, not guidance for jobs.*"

The second study to which we will refer was a study made by a Committee of the Board of Education, Dr. Ira S. Wile, the well known Psychiatrist, then a member of the Board, was its Chairman. In that report we find a redefined statement of vocational guidance in the following terms:

> "Vocational guidance should be an educational plan sufficiently flexible and elastic to afford the opportunity to school children to find themselves in terms of vocational aptitudes. It should seek to devise means for securing information regarding the numerous groups of industries, together with the underlying processes, to ascertain, in so far as possible, the aptitudes and characteristics of school children, with a view to giving them suggestions on how best to develop their innate powers. It should offer advice as to wherein educational advantages may be secured in order to foster the type of training best adapted to the needs of individual children."

Here we find definitely for the first time a shift of emphasis in vocational guidance from "the job and its requirements" to "the child and his needs." However, it should be noted that this same idea was implied in the reason given by the superintendents in Boston for the inclusion of this activity as a responsibility of the schools of that city. Through all of this the age group most largely concerned is the under sixteen.

In the definition of vocational guidance as an "educational plan" we have a "child-centered" concept as against the "job-centered" concept inherent in the accepted definition of vocational guidance. For many years differences in interpretation have existed among those interested as to the "all-inclusiveness" or to the "exclusions" which should be associated with the term "vocational." In fact there have been many who have argued for the elimination of the word "vocational" from the "guidance" now operating in our schools, since, so restricted, it does not properly describe many of the activities now being carried on by the "counselor." At the peak of these discussions in 1934 Dr. John M. Brewer contributed an article in "Occupations—The Vocational Guidance Magazine" titled—"Let's Talk the Same Language," in which he said:

> "The adjective 'vocational' . . . is seen to comprise all gainful occupations, all utilitarian labor including homemaking. . . . The word then must include all ideas within the proper meaning . . . possibly 'work guidance' might be simpler. . . . On the other hand those of us who are interested in the whole of education, as well as in this part sometimes speak of other forms of guidance as if they belonged to 'vocational guidance'. . . . Any counselor, or any teacher, may, in discussing a specific problem with a pupil, discover incidental problems . . . . but this does not mean that the functionary of one kind of guidance is to appropriate others. . . . If the vocational counselor needs to handle educational problems his position should be called "Educational and Vocational Counselor."

Myers credits Truman L. Kelley with the first proper use of the term "Educational Guidance." He used it as the title of his Doctor's Thesis in 1914 to describe the guidance given in "aiding pupils in selecting a high school curriculum" and considered it as a basis for, but not synonymous with, vocational guidance.

Myers further credits Jesse B. Davis with the introduction of the term "Moral Guidance" when in 1912 he used it as the title of a paper read before the National Education Association, "Vocational and Moral Guidance through English Composition." Other forms—"civic", "social", "health", "recreational", "religious", leadership", to mention only a partial list, have followed through the years.

In accepting Brewer's limitations to the word "vocational" as applied to guidance, we conclude that through the years "Vocational Counselors" so called have really been "Educational and Vocational Counselors" In accepting Kelley's thesis we must also conclude that many of the activities included in the programs of vocational guidance have been other forms of guidance which might very properly be called "Educational Guidance."

Professor R. E. Cunliffe of Rutgers University in a bulletin issued in 1933 on the subject of Vocational Guidance, writes:

> "One no longer chooses a vocation in the sense explained by Parsons, but instead must make a long series of separate choices and decisions based upon needed adjustments from time to time in the course of his development."

In the light of these facts we are led to the conclusion that what we have been designating "Vocational Guidance" more nearly approximates "Pupil Personnel Work" (see *Guidance*—Encyclopedia of Modern Education), which Myers describes as consisting "of those activities of a school or school system whose controlling purpose is to bring each pupil of the community into the educational environment of the schools in such condition and under such circumstances as will enable him to obtain the maximum of the desired development from his environment."

All of the forms, kinds, or phases of guidance mentioned are included in such an undertaking. A number, in fact most of them, are so closely integrated with the education of the child as to be inseparable from it and must therefore be considered the responsibility of the teacher. Other phases such as "Educational Guidance" and "Vocational Guidance" come dominantly into focus at a time when the child and his parents must make definite choices and decisions which tend to shape his whole future. In the area of Educational Guidance the first crucial time is during the junior high school years (see Junior High School) (7th–8th and 9th school years). This culminates in the choice of secondary school and curriculum. Wisely guided, the child will enter that school and curriculum most in line with his abilities and interests, and one calculated to develop him in line with his potentialities. Vocational guidance will be dominant particularly during the last years of his secondary school period. The tenth school year will be one of orientation and adjustment. In this year both educational and vocational guidance will be fully operative and the counselor, whatever his official title, will be functioning as an Educational and Vocational Counselor.

Where such a program is fully operative, the child will develop in line with abilities and potentialities, and in doing so will acquire knowledges and skills which will find an outlet at an occupation level and within a range suitable to his abilities. As he develops in these later secondary school years, it is a function of the counselor to broaden his occupational horizons by pointing out to him the economic activities where he may best be able to function and to interpret these to him. This is vocational guidance within the realm of "assisting the child to choose, prepare for, enter upon, and progress in a vocation."

Such a guidance program functions through the School Guidance Service—a service through which the counselor—vocational or educational—confers with pupils, parents and teachers on curriculum; extra-curricular or personal problems; and on school policies—he will cooperate with community agencies, particularly on matters of health, social problems, and on vocational placement problems.

It is in this area that his activities will bring him into contact with industrial personnel, for it will be the workers in this area that will be receiving the product of the school as it is passed on to them, and these are the people who can be most helpful in indicating weaknesses as well as strength, so as to better enable the schools to fuller develop their pupils. As Educational Counselor he will assist in orientating and adjusting the pupil to his school environment—as Vocational Counselor he will perform the same service to the pupil leaving school to enter industry, whether at graduation or before graduation.

No advice given can be more valid than the data upon which it is based. For the Counselor, either Educational or Vocational, the most important data at his disposal should be on the "Cumulative Record." While no one person can be held responsible for its compilation, yet neither educator nor counselor can function efficiently without it and the counselor is in a position to insist, in season and out, on its importance. It is the vocational counselor's responsibility to see that there is available in the school, and the pupils are shown how to use and interpret from it current reliable information both educational and vocational. It is likewise the responsibility of the vocational counselor in the school to assist the pupil in his transition from school life to industrial activity—either by directly assisting him in his initial job quest, or referring him to a capable and responsible local agency. And it is further the responsibility of the one who vocationally guides to see that all pertinent data on the functioning or lack of functioning of the child as he enters industry is collected, evaluated, interpreted and passed back to those responsible for planning the curriculum, for their guidance in better fitting the school to the needs of the child.

C. M. S.

HISTORY OF VOCATIONAL GUIDANCE IN THE UNITED STATES. Although vocational guidance originated with the Egyptians as far back as 2500 B.C., it has remained for the United States to bring the movement to fruition. In a society in which one inherits his father's job, vocational guidance is of little importance. But in the United States, where vocational opportunities are opened anew to each generation, vocational guidance becomes of paramount importance. It is only natural, therefore, that the modern democratic concept of vocational guidance, should originate in this country and that the Vocational Guidance Movement should reach its fullest scientific development here.

Like most educational movements, the Vocational Guidance

Movement started outside the school. Prior to the formulation of any organized program, vocational guidance was advocated and practiced by many individuals and groups throughout the United States. Charitable and philanthropic agencies first gave it encouragement and demonstrated its value. Only after the pioneering work had been done by private agencies did educational authorities venture into the field.

That the movement did not develop in the schools as a correlative of manual training and industrial arts, is indeed surprising. The problem of selection of boys and girls for training in vocational courses was not even realized until long after vocational educational courses were introduced into our schools.

Beginning about the year 1895, the need for vocational guidance was first brought into the focus of public attention. Following the turn of the century, a group of authors writing on the general topic of success, gave impetus to the new movement. With Ralph Waldo Emerson's famous words, "Hitch your wagon to a star" as its slogan, this school of writers challenged youth to high purpose in life. Elbert Hubbard, Russell Conwell, Horatio Alger, William Makepeace Thayer, Frank W. Rollins, and Nathaniel C. Fowler were among the most noted of these. "What Can a Young Man Do?" by Rollins (1907) and "Starting in Life" by Fowler (1906) were among the first books on vocational guidance published in America.

The Schools Follow

Among the first school men who attempted some form of organized guidance were Jesse B. Davis, William A. Wheatley, and Eli W. Weaver. Davis attempted some systematic counseling of students of Central High School in Detroit beginning as far back as 1898. Wheatley is credited with teaching the first class in occupations in 1908, and later wrote a text-book with Gowan which was widely used for such classes. George H. Merrill of San Francisco was one of the first men in this field of Industrial Arts to realize the necessity of selecting students for such courses, and he developed a plan which was used in the San Francisco schools. The General Shop as a means of occupational exploration was first tried in Rochester, N. Y., in 1915. Pittsburgh followed soon after with courses for girls in Home Economics as well as a general course in Junior Business Training. In none of these courses, however, was any organized effort made to use these experiences as a basis for vocational guidance.

The Junior High School Movement started in 1915 with its emphasis on exploratory activities, but it also largely overlooked opportunities for vocational guidance. Established as an exploratory institution, the junior high school has for many years failed to realize its real purpose. What exploration was afforded through the industrial arts courses, and through homemaking, commerce, etc., has become largely incidental. Few teachers in that level today have had sufficient training in the field of vocational guidance to make the program of the junior high school really functional as an exploratory institution.

Parsons Starts the Movement

Frank W. Parsons started the Vocational Guidance Movement in Boston in 1907, and from this movement all other forms of guidance and personnel work have stemmed. Working through the Bread Winner's Institute, a philanthropic agency in Boston, Parsons first placed vocational guidance on a scientific and organized basis. He analyzed the process, formulated the first statement of basic principles in a book, *"Choosing a Vocation,"* and used tests in counseling. Parsons' untimely death in 1907 prevented the full development of his program, but the work he started was carried on by his friends and associates.

As a result of Parsons' work, the Vocation Bureau of Boston was established and carried forward, first by David S. Wheeler and later by Meyer Bloomfield and Frederick H. Allen. The Vocation Bureau did not undertake counseling, but concerned itself with the training of teachers in the Boston schools by means of lectures, publications, conferences, etc. The Vocation Bureau of Boston later became the Bureau of Vocational Guidance of Harvard University.

The establishment of the Department of Vocational Guidance of the Boston Public Schools soon followed in 1915, but, like all new developments in education, met with strong opposition. No less an authority than Albert F. Winship, then editor of the *Journal of Education,* attacked this new intruder in the educational sanctum sanctorum. Hugo Munsterberg of Harvard added his thundering protest to that of the other defenders of the status quo.

Although the reactionaries did not succeed in completely blocking the new movement, the support given it by the Boston School Committee was hardly enthusiastic. The vocational guidance director was given no supervisory powers over the guidance program in the schools, and functioned chiefly in an advisory capacity. The guidance activities were left to the individual school and were subject to the caprice of the principal. Teachers were allowed only part-time for counseling and could not give it their full and undivided attention. However, the Boston School Committee did set up an examination for "vocational assistants," as they were called, and thus established the first form of credentials for counselors.

The Movement Spreads

Up to World War I, following the inauguration of the program in Boston, over fifty high schools in the United States had incorporated plans for vocational guidance. New York City did some work in an unorganized way in 1908, but no centralized program was adopted for many years. In Chicago, the Central Bureau was created in 1916. Grand Rapids, Michigan adopted a plan for teaching occupations through the English classes.

In general, the development of vocational guidance programs in the various cities was comparable to the experience in Boston. Most were sporadic in nature, since the program not only had to fight its way into the schools, but was subject to constant attack even after it was established. Programs were set up in Los Angeles, Chicago, Pittsburgh, and Cincinnati but were temporarily abandoned. Among the first to establish permanent bureaus were Cincinnati, Lincoln (Nebraska), Minneapolis, and Oakland, Calif.

Although only fourteen full time vocational guidance officers were employed by high schools in the country in 1916, progress was being made in related fields. In that year the Opportunity School of Denver was organized by Emily Griffiths. G. Vernon Bennett organized in Pomona, California a comprehensive program for teaching occupations throughout the grades and first used a cumulative record in vocational guidance. The most complete program organized during this period was adopted in Providence, Rhode Island, in 1918.

Impact of World War I

Under the stimulus of war, most progressive changes in education have been brought about. The development of vocational guidance was greatly accelerated by the impact of World War I. The need for scientific selection and training of men for the Armed Forces resulted in the establishment of a psychological section as a part of the Army personnel program. Millions of men were given the Army Alpha and Beta tests, and assignments of men to duty were based in part on test results.

As a result of the study of test data gathered in the Army testing program, the "Army Vocational Intelligence Scale" was devised. This scale purported to show the intelligence required in many types of occupations, although the spread was so great as to render its value open to doubt.

The Testing Movement Starts

One of the most far-reaching outcomes of World War I was the testing movement. School administrators abandoned themselves to an orgy of testing; but, unfortunately, after the tests were given, they were often filed away in the superintendent's office and promptly forgotten. Few trained counselors were to be found in the schools who were capable of interpreting the results for either educational or vocational guidance. The only tangible outcome of the work at that time was the realization of the fact of individual differences.

Aptitude Testing Develops

The rehabilitation of disabled soldiers following World War I provided a stimulus to the testing movement as well as to vocational education and vocational guidance. Over one hundred different trade tests were devised, and standardized tests were administered as a regular part of the counseling procedure in the Rehabilitation Division of the U. S. Army Medical Corps as well as in the Veterans' Bureau.

In 1918, J. B. Miner developed a vocational interest test followed by Edward K. Strong, Jr., in 1925. Meanwhile new general intelligence tests were being devised such as the Otis Group Intelligence Test, and the Terman Group Test of Mental Ability. For the measurement of mechanical aptitude, T. W. McQuarrie, L. J. O'Rourke, and J. L. Stenquist brought out tests, while tests of manual dexterity were devised by Johnson O'Connor and other psychologists. Tests for clerical, musical, and other types of abilities soon followed.

Federal Support Is Given

Problems concerning education and vocational adjustment began to loom so large on the educational horizon that the U. S. Office of Education began to publish materials and bulletins relating to this field. Finally funds were made available, and in 1938 the Occupational Information and Guidance Service was established under the U. S. Office of Education and headed by Harry A. Jaeger. Federal funds were also made available for the payment of half the salary of state directors. Maryland was the first state to take advantage of the new legislation, followed slowly by most of the other states.

Employment Service

Although the federal government had supported an employment service as a part of the U. S. Bureau of Immigration since 1907, it was not until 1932 that the program was established on a national scale. Under the Wagner-Peyser Act of 1935, most of the states established offices with funds matched by the federal government. As a war measure, the federal government in 1942 took over the operation of the offices, and extended the service throughout the country. Since 1935, the larger offices of the U. S. E. S. have offered counseling services; and in 1943, a special counselor to assist returning war veterans was provided in each office. The U. S. E. S. has played an important part in World War II, working in close cooperation with the Manpower Commission and Selective Service.

The National Organization Founded in 1910

The National Vocational Guidance Association had its inception in Boston in 1910 as the result of a conference sponsored by the Chamber of Commerce of that city. The final organization did not take place, however, until 1913 at Grand Rapids, Michigan. From 1920 forward the growth of the national organization was rapid, and today (1945) it now has 69 branches with a total membership of 3,165. Except for a few gaps, meetings have been held continuously each year since 1913.

In 1920, the NVGA produced a statement of the philosophy and aims of vocational guidance in a bulletin entitled, *"Principles and Practice of Vocational Guidance."* Since 1922 it has published the national organ, "The National Vocational Guidance Association Journal," Frederick J. Allen serving as the first editor. Harvard University furnished the first home of the organization, but later the national headquarters were moved to New York City. In 1933, the National Occupational Conference assisted in enlarging the scope of the journal and the name was changed to "Occupations, the Vocational Guidance Magazine," and today it bears the title, "Occupations, the Vocational Guidance Journal."

The Organization's Name Remains

Several attempts have been made throughout the years to change the name of the organization and to remove the vocational guidance emphasis in its statement of principles and practices. The founders of the organization have thus far steadfastly refused to change the vocational emphasis which has characterized the movement since its inception in 1908. As a result of this refusal, a separate organization was organized in March, 1941, at Chicago, called the National Guidance Association, which publishes a national organ, "The National Guidance Association News."

A Council Is Formed

As a result of the Vocational Guidance Movement, over one hundred organizations devoted to some phase of vocational adjustment have developed in this country. To coordinate the work of these many groups, the American Council of Guidance Associations was formed at Cleveland, Ohio, in 1934.

Occupational Research

Among the organizations devoted largely to research in the field were the Society for Occupational Research, Ltd., founded by G. Vernon Bennett (Los Angeles, 1925); the Rochester (New York) Athenaeum, (1928); the Minnesota Employment Stabilization Research Association (1931); the Adjustment Service of New York City (1933); and the National Youth Commission (Washington, (1933). The Psychological Corporation, founded by J. McKeen Cattell in 1921 in New York City, has branch offices in a number of the larger cities. The Personnel Research Federation was founded in the same city in 1923 by Walter V. Bingham. These organizations have carried on research, published books and monographs, developed tests, conducted conferences, established clinics, and furthered the development of scientific vocational guidance in many other ways.

Literature in the Field

In no field of education has more literature been published than in the field of vocational guidance. Many of the publications of the U. S. Office of Education have been in this field. The National Vocational Guidance Association has published over 60 occupational pamphlets. Extensive bibliographies have been published from time to time by the U. S. Office of Education and by other agencies. Many of the books published have been intended for use in the training of counselors.

Counselor Training

The first regularly organized program for the training of counselors was given to 117 Boston school teachers by the Vocation Bureau in Boston in 1910. Planned by Frank Parsons himself, the course was intended to open in 1908, but was postponed through his untimely death in October of that year. The courses planned by

Parsons were taught by Meyer Bloomfield and his associates. In 1911, when the Bureau was transferred to Harvard University, courses were offered for the first time on a university campus. Since that time, over twenty colleges and universities have established curricula for training counselors, and a number are now offering graduate courses leading to degrees in the field of research and guidance.

Vocational Guidance in World War II

The mobilization of the manpower of the nation for the Armed Services and for war industry was early recognized as essentially a problem of vocational guidance and selection. General Lewis B. Hershey, a former school teacher, was placed at the head of Selective Service, and Walter V. Bingham, one of the leaders in the field of aptitude testing, was called to head the personnel program of the Army. At every Reception Center, clinics were set up with trained interviewers equipped with over fifty types of tests. Every man inducted into the Army was given the Army Classification Test, and, if he had any occupational skill, he was also given a trade test. On the basis of test results and detailed personal data furnished by Selective Service from the schools, each man was assigned to the work for which he was best fitted within the framework of the Army's demands. The results of the tests and of the interview were recorded on the Soldier's Qualification Card which, together with his Service Record, followed him throughout his service in the Army. The use of tests was developed to its highest degree in the Army and Navy Air Forces where they were used, not only in the initial selection of trainees, but throughout the various stages of training.

A similar development of personnel methods was found in industry. Every war plant of any size employed a personnel manager who was charged with the selection of personnel and the development of the personnel program.

The National Occupational Conference

Established in 1933 under a subvention of the Carnegie Foundation, the National Occupational Conference did much to further the Vocational Guidance Movement in the United States. During the trying years of the depression, it made possible the continuation of the *National Vocational Guidance Association Journal* under a new title, *Occupations, the Vocational Guidance Magazine* in a new and enlarged form. It also sponsored the publication of several books and numerous pamphlets on occupations, and did much to promote vocational guidance by sponsoring a tour of the United States by representative school superintendents under the leadership of Dr. Edwin A. Lee, president of the organization. The work of the Conference is still carried on through the publication of the Occupational Index.

Present Status

As indicated by the statistics gathered by the U. S. Bureau of Education, the Vocational Guidance Movement in the public schools has experienced a set-back as a result of World War II. In 1939, there were 2,286 guidance officers in 1,297 schools serving 2,062,344 students; while in 1942 there were 1,662 counselors in 1,233 schools serving 1,659,744. This indicates an average of one guidance officer for each 900 students in 1939 as compared to one for each 1,000 in 1942. In spite of the fact that the military authorities urged that every high school provide a military counselor to aid in advising high school boys destined for the Armed Services, the response on the part of the school authorities appears to have been negative.

Although Anna Y. Reed, one of the pioneers in the field, has indicated in her book that little if any development in vocational guidance has taken place since the time of Parsons, there are many evidences that substantial progress has been made. The junior high school movement arose largely through the recognition of the need for exploratory experiences for youth as a basis for vocational guidance. The "work-study plan," another outcome of the Vocational Guidance Movement, has been followed for many years in the Middle Western states, and has been adopted with notable success by such cities as Philadelphia, Los Angeles, and Oakland, California.

Text-books for the study of occupations have been prepared and and courses given, which rank with those in any other subject field. The unorganized study of scattered pamphlet materials which characterized early attempts at teaching occupations, has given way to an organized and systematic approach through well-prepared text-books.

Recognizing the need for the vocational guidance of World War II veterans, the United States Army prepared over nine thousand "Vocational Guidance Kits" to help soldiers while still in the army to choose intelligently a peace-time occupation. The Army Separation Centers each has a counselor to assist the men on leaving the service. Counselors are also provided in the many veteran's information centers which have been established throughout the nation. The entire readjustment and rehabilitation program for veterans centers in vocational guidance and in vocational education. Under the G. I. Bill of Rights, veterans are given training at government expense for the purpose of preparing them for gainful employment. Every effort is made through scientific vocational guidance to prevent the indiscriminate assignment of veterans to vocational courses without regard to individual abilities as has been done all too often in the public schools.

Outlook for the Future

Under the stimulus of the example set by the Armed Forces and the support given by the G. I. Bill of Rights, the Vocational Guidance Movement should witness within the next decade the greatest advances in its history. The value of vocational guidance principles and techniques has been amply proven by both the Armed Services and by war industry. Perhaps, with these examples before them, the schools will overcome their traditional timidity, and will at last recognize the fact that the utilization of our human resources is the greatest problem of peace as well as of war.

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J. H. B.

HOME ECONOMICS, APTITUDE FOR. Home economics is a broad field of study which provides for the personal development of young women and prepares them for the many responsibilities of the homemaker. For those who expect to pursue one of the several professional fields of work for which home economics gives basic preparation, there is the third educational objective of specialized vocational efficiency. Therefore, "college experience in home economics should contribute to the development of an individual who (1) is well adjusted emotionally and socially; (2) has tools of experience adequate for her level of social-professional development; (3) has the potential ability to manage a household; (4) is vocationally oriented and can recognize and achieve the place in the vocation which is in line with her interests and capacities; (5) is growing in cultural appreciation and participation; (6) can successfully manage her personal resources in terms of personal plans and needs, and in terms of group welfare; and (7) is aware of and participates in the solution of present-day social and economic problems of individuals and families." [4]

For such development home economics instruction is given in the areas of family and social relations, child development, foods and nutrition, clothing and textiles, applied art, household equipment, housing, and home management. Closely related to these is basic instruction in the social and natural sciences as well as in the so-called cultural fields of study. This presents a complex picture which may explain in part why the problem of assessing the aptitude of young women for home economics has been largely neglected.

It would seem safe to assume that every individual has some aptitude for the successful performance of certain of the responsibilities of the homemaker. For some it might be social qualities that contribute to satisfying relations with family and friends; for others, manual dexterity might mean expertly prepared meals or laundered clothes; artistic appreciation and creative ability might mean attractive homes and clothes for some families or computational skill might insure accurately planned diets and carefully balanced accounts in still other homes. It would be commonly agreed that home economics has a contribution to make to the general education of all girls. It should be recognized, however, that the college curriculum in home economics is not one in which every girl will be satisfied or successful. Thus the question of aptitude for home economics may appropriately be narrowed down to one of vocational choice.

The approaches which have been made to this problem in a few colleges indicate a growing interest in it. A committee in the division of home economics working on the problem of vocational guidance as part of the Freshman orientation program at the Iowa State College point out the personal qualifications that are needed both by the homemaker and the professional home economists as follows:

Genuine interest and belief in her work.
Sound physical and mental health.
The habit of applying principles of home economics in her daily living: (Personal appearance, food habits, room arrangement).
Social poise and refinement.
A friendly manner.
A good command of English (oral and written).

An open-mindedness to criticism.
Honesty.
Resourcefulness.
Dependability.
Ability to work well with people.
Willingness to work.
Broad interests.
Wholesome sense of values.
Sound judgment.
A zest for living.
A sense of humor.

Over and beyond these, there are additional qualities which this committee recognizes as essential for each field of specialization. College women who anticipate preparing for child development positions should have an interest in children, imagination, emotional balance, a pleasant and interesting voice and physical endurance. Those who look forward to employment as dietitians must be able to work under pressure, to compute dietaries quickly and accurately and to adjust to hospital regime. They should also have a sympathetic understanding of the whims of sick people and an interest in housekeeping. The nutritionist in welfare agencies must have a social viewpoint, ability to work with adults and to adapt her thinking to low-income groups. Important among the qualities of the household equipment specialist are mechanical aptitude, skill in cookery, accuracy and a keen power of observation.

Those considering institution management positions should possess good food sense, and business judgment. They should also be orderly and able to work long hours. Administrative and organizing ability, as well as tact and forcefulness in directing others, are important.

Retailing positions in clothing require special interest in fashion and merchandising as well as attractiveness in appearance and ability to meet people easily. Tact, poise, and flexibility are important qualities. The clothing specialist whose interest is in designing clothes must have imagination, creative ability, and an analytical attitude toward design and fashion. She must also have an interest in current affairs which affect clothing fashion.

Application of art to the home and its furnishings in retail merchandising or interior decoration also calls for creativeness and imagination. Originality and enthusiasm, a sense of smartness and physical vigor are other requisites for success in this area of work.

The home economist who wants to enter the journalism field should be promotional-minded, alert, emotionally well balanced, self confident, and able to work under pressure .She must also have a sincere interest in and liking for others and an objective viewpoint.

Teaching is a common field of work for the home economist with a broad background in the various areas of home economics. She should have a sincere interest in and liking for adolescents, and ability to work effectively with all age groups. Emotional balance, good scholarship, and self-confidence and poise in appearing before groups are other qualities that should be recognized.

Research in home economics calls for intellectual curiosity, accuracy, good powers of observation, and certain manipulative skills.

No formal checking device has been used at this institution for determining such qualities of Freshman women. An understanding of these requisites for various fields of work, however, has helped students in assessing their own interests and abilities when deciding upon their fields of specialization. A similar approach in guidance of home economics students has been made at several other colleges and universities.

At the Ohio State University, the *Kuder Preference Record* has been used with freshmen women students as a part of the guidance program in the School of Home Economics.[1] Experimentation has shown that the *Record* makes a helpful contribution to the total picture of the individual in identifying vocational and avocational interests.

Some of the findings are summarized in a progress report. Particularly pertinent are these:

> "The study does not reveal a pattern of interests which is characteristic of home economists as a group.
>
> "However, the student who is considering home economics as a field or who is already enrolled in it, can profitably compare her own interests with the outstanding preferences of those actively engaged in various professions requiring a home economics background.
>
> "Such comparison should serve as the basis for a discussion of specific activities in the field being considered which call for certain interest patterns. For example, the scientific interests of the hospital dietitian are clearly used in the planning of special diets based on exact scientific facts; her computational interests in the keeping of necessary accounts, the estimation of diets of given composition. and the ordering of food supplies. Similarly,

the artistic and social service interests of the home economics teacher should be related to creative activities in home making and to desire to work with others and help them.

"The interest profile should be used in relation to other factors—the student's personality, intelligence, special aptitudes, handicaps, health, and educational and experimental background.

"It is important for both student and adviser to interpret the Preference Record in terms of what it claims to measure; namely, activity interests, not ability, nor appreciation. This has been found to be doubly important to remember in the artistic, writing, and musical performance areas, where ability or appreciation are so readily assumed to be the interpretation."

At the Pennsylvania State College, a study was made of the Strong *Vocational Interest Blank for Women* to ascertain its value in predicting success of student teachers in home economics.[2] The Strong test is designed to help determine whether one would like certain occupations or not.

Findings of this study which bear on vocational choice are of interest.

"The results from the Strong Vocational Interest Blank, scored by scale for home economics teachers, might be used as an aid in guiding students in their choice of a major in home economics. This seems to be especially true in distinguishing between students in teacher education and students in institution administration.

"The results from the Strong Vocational Interest Blank, scored by scale for home economics teachers, might be used to help to differentiate students who are interested in home economics teaching from those students who are less interested and would likely withdraw.

"A low interest rating on this scale seems to mean lack of interest in teacher education and may mean little success in student teaching. A high interest rating seems to indicate interest in teacher education but does not necessarily predict success in student teaching. Therefore, this scale, as determined by the evidence presented in this study, cannot be used to predict success in student teaching."

At the New York State College of Home Economics, the Strong *Vocational Interest Blank for Women* was used in a study of interest patterns of successful and unsuccessful home economics students.[3] It was hoped that the investigation might furnish some material for an aptitude test in home economics that would identify students needing special help in adjustment. The study was made of sixty pairs of students who were similar in high school achievement as represented by the regents average, and in aptitude as indicated by the same or nearly the same university decile rank in the American Council Examination. College records showed that these students at the end of their sophomore year in college differed in academic achievement; in participation in activities of the university community and in probable employability as indicated by summer job reports, willingness of the counselor to recommend for a position, and reports of class instructors.

Among the conclusions based on checking of the eight parts of the Strong Vocational test are:

> "The successful group of students show more positive reactions to activities, amusements, and school subjects, which they have had an opportunity to experience. The unsuccessful group shows more positive reactions on a list of occupations which they have had no chance to know first-hand and few responses to activities, amusements and school subjects with which they have had direct contact.
>
> "The successful group shows consistent interest in the more prosaic occupations of dietetics, teaching, and social work. The occupational preferences of the unsuccessful group form a pattern usually associated with childish day dreams. They show, too, a preference for escape literature.
>
> "The successful group apparently accepts conventional standards of judgment in liking thrifty, professional, religious people. The unsuccessful group dislikes these qualities and expresses favor for the opposing characteristics.
>
> "The successful group appears to be more extraverted, interested in the activities and amusements of the college community, and in the occupation for which there is some probability they may enter. The unsuccessful group presents an interest pattern which suggests day dreaming and fantasy. They do not give an impression of concern with everyday affairs or as wide interests in the activities and amusements available."

The need for further exploration of ways to determine aptitudes for home economics is apparent. Beginnings which have been made should give assurance that the problem is not insurmountable.

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F. F., M.A.

HUMAN ENGINEERING LABORATORY. The Human Engineering Laboratory started in 1922, at the suggestion of F. P. Cox, as a part of the General Electric Company in West Lynn, Massachusetts. A few years later it was affiliated with Stevens Institute of Technology in Hoboken, New Jersey and with Illinois Institute of Technology in Chicago, Illinois. In 1943 the Laboratory purchased a house in New York where it operates under the name of the Johnson O'Connor Research Foundation. As research findings increased and interest in aptitude testing grew the Laboratory expanded and now has laboratories in New York, Boston, Philadelphia, Chicago, St. Louis, Fort Worth, Tulsa, and Los Angeles. The Laboratory is incorporated as a non-profit research unit and the charge which it makes for tests covers little more than operating expenses. Funds for research come from organizations, institutions and individuals interested in the work it is trying to do.

The primary purpose of the Laboratory is to gain through the isolation of aptitudes and their exact measurement a scientific understanding of human beings. Just as the gradual isolation of chemical elements has led to the highly developed science of chemistry, in much the same way the Laboratory believes, the isolation of aptitudes or mental elements will lead to a broadening knowledge of the science of man. Research has led to the measurement of eighteen separate mental elements. How many more exist no one knows; perhaps like chemical elements there may be nearly a hundred. Ordinarily no prescribed course and no stereotyped job challenges all of these which one possesses and no human being can possibly know all of the fields in which one can hope to do best. The Laboratory, therefore, furnishes measured data which serve as a guide, but it does not aim to make specific recommendations.

Originally the tests were conceived as worksamples—literally as sample jobs designed to measure a specific type of work. Later research has proven that, rather than measuring aptitude for any restricted job, the Laboratory's worksamples measure a manner of thinking which enters many fields. Thus, the test for structural visualization, designed to measure engineering aptitude, has been found to be a gift for visualizing three dimensional structure and it is fundamental to success not only in engineering but in architecture, surgery and the higher types of mechanical work. Accounting aptitude, associated with success in clerical fields, is an instinctive ability for handling symbols quickly and accurately. Personality, as the Laboratory measures it, distinguishes between the group worker and the individualist. Creative imagination or ideaphoria, is a characteristic of those whose work demands original thinking and a ready flow of ideas. Inductive reasoning, common to the writer and the diagnostician is a gift for sensing relationships. Analytical reasoning measures a power for organization. Observation, which was first found to be an attribute of factory inspectors, is an aptitude which many people recognize in themselves. Finger and tweezer dexterity, while not mental elements in the strict sense, are distinct characteristics unrelated to each other and to the other aptitudes. Number memory is an inherent ability to remember numbers and has been found to enter into such varied work as production control, stock market trading and magazine editing. Memory for design and proportion appraisal measure two of the aptitudes of artists. Tonal memory and pitch discrimination, two of Dr. Carl Seashore's tests, measure musical aptitudes.

In some aptitudes men excel women; in others women excel men. Aptitudes grow much as does physical height and after maturity remain relatively unchanged. Acquired knowledge shows no such tendency; capacity for knowledge is unlimited. Wide knowledge background characterizes successful people in all types of work. The Laboratory administers vocabulary tests in order to inspire in people an interest in gaining the knowledge which will enable them to use their aptitudes fully. Through its research the Laboratory has formulated three laws of learning.

While most of the tests must be administered individually, a few such as creative imagination, the music tests, and the vocabulary tests are given in groups. The Laboratory hopes ultimately to adapt its worksamples to group administration, but as yet its English vocabulary tests are the only ones which are sold to the public.

It now requires two appointments of three hours each given on separate days to administer the entire battery of tests to adults and to students in high school and college. Boys and girls from age eight through grammar school require only a single appointment.

At the completion of his tests each person receives a bar graph on which his scores are listed, and a brochure which best fits his particular aptitude pattern. The brochure discusses each aptitude in detail and furnishes illustrations of occupations and professions in which each is known to be used. By studying his bar graph in conjunction with his brochure, an individual is best able to understand and interpret his own test scores.

Half of each testing period is devoted to experimental, and semi-experimental tests for it is by this means that the Laboratory is able to extend its research. Staff members direct research projects and publish their findings in technical reports written primarily to keep other members informed of research progress. Brochures written for the public present research results in a condensed form and in less technical language.

Before any test can be used with any degree of assurance, it must meet the standards of reliability and validity; that is, it must qualify as an accurate measuring device apart from its possible use and it must measure a definite element. Every test is checked with care first with people of known success and second by predicting the futures of young people, and then following them to see what percentages of the predictions come true.

The isolation of each new aptitude has added perceptibly to a better understanding of human beings. Aptitudes now known combine to form many thousand different patterns probably calling for as many different types of skills and knowledge in order to put each person into exactly the work for which he is best fitted. If as more mental elements are isolated they combine as chemical elements have, the Laboratory will feel that it has made substantial progress.

Everyone probably recognizes one or more of his innate traits without benefit of aptitude tests and he may be a good judge of his acquired knowledge, but probably not more than one person in a thousand is aware of every aptitude and at the same time has the knowledge and the skill to put them to fullest use. The Laboratory believes that its contribution to the world should be an honest attempt to help each individual to understand himself so that he faces new conditions, problems and opportunities with as accurate a knowledge of his own strengths and weaknesses as science can supply.

For general discussion see: "Unsolved Business Problems" by Johnson O'Connor. Published 1940.

E. W

I

IMAGINATION, CREATIVE. The Human Engineering Laboratory defines *Creative Imagination* or *Ideaphoria* as a mental fluency, a fluidity of ideas. It is the inventive mental element which enables the advertising man to develop new merchandising ideas, the writer to conceive new plots or characterizations, the engineer to invent new mechanical devices, the salesman to adjust to new and challenging situations. Operating alone, this trait does not insure successful creation; good original work is produced by persons who combine with it other aptitudes and specialized knowledge. When not turned to a constructive purpose, Creative Imagination frequently precipitates a chronic shifting from one unfinished task to another which seems to offer novelty.

The test for Creative Imagination consist in writing for ten minutes, as rapidly as possible, on a given subject. Quantity alone counts. Errors in spelling, grammar and vocabulary are not scored, since it is the aim of the Laboratory to measure the individual's innate flow of ideas, unimpeded by possible knowledge deficiencies.

Creative Imagination in its original form was one of four measures of creativity given by the British Fatigue Research Board. It was scored on the basis of quality of thought, as judged by a trained staff. The Laboratory, desirous of finding an automatic scoring method which rivaled in accuracy the trained judgment of the English group, evolved the plan of grading papers by number of nouns. This, however, showed a slight correlation (0.20) with the English Vocabulary score. In an attempt to eliminate this correlation the research department scored first on number of ideas, then on unusualness of ideas. Instead of being reduced, the vocabulary correlation in both instances was increased. Imagination as one normally speaks of it in written composition correlated closely with a wide and exact grasp of English words. At this point the Laboratory staff reversed its direction and scored on total words written in ten minutes, producing thereby the statistically independent test now in use.

The present Ideaphoria test has a reliability of 0.80. This figure was obtained through the split-half technique.

For further discussion see: "Ideaphoria" by Johnson O'Connor. Published 1944.

N. H.

INDIAN SERVICE. Despite the fact that the Indian population of the United States is relatively small (about 360,000), it differs from other minority groups.

Indians are a proud and independent people who, despite their reduction in numbers from an estimated population of about 800,000 at the time of the discovery of America, and the loss of their lands and of their way of life, have never yielded in their pride of race or their independence of viewpoint. In contrast to the millions who have come to America from every racial group in the world and who have voluntarily given up their native languages and customs and with amazing swiftness accepted English as the tongue in which they speak and think, and who have sought desperately to identify themselves with the American way of life, the Indian has proudly retained his native language and to an amazing degree his native culture. There are groups like the Navaho in Arizona and New Mexico where nine out of ten of the Indians speak only Navaho, and the Papago further south in Arizona where 65 per cent are estimated to be non-English speaking. Even in eastern Oklahoma where the Indian has been most completely assimilated, there are still remote communities where Cherokee or Choctaw is spoken. The schools of the Indian Service face the necessity of giving to Indian children a new language, a new set of objectives and social values, and a new set of skills essential to their self-support.

In the rapid westward expansion of the Whites there was no uniformity in the status in which the Indian found himself. In some areas a compact area of land which Indians might use together was set aside as a reservation. Elsewhere the Indian found himself living side by side with Whites. Where the two races intermingle it has often made for a more rapid assimilation, because in order to live it was necessary for the Indian to adjust to the White man's pattern. Indian children attend public schools and are exposed from childhood to daily contact with Whites of all ages. Today more than half of the Indian children of school age are attending public schools. In the areas where tax free Indian lands are contiguous, there is no tax base for public schools, and the Federal Government operates special schools for Indians. Federal Indian schools enroll some 35,000 Indian children in the United States and Alaska.

Until a dozen years ago secondary education in Indian schools was limited to some eight nonreservation boarding schools, located in the outskirts of as many cities and remote from the Indian country. Since that time the Indian Service has extended the educational program on the reservations into the secondary level, until today the Indian Service operates 40 vocational high schools. These federal schools undertake the education of four different types of young people. First, the reservation Indian who finds his permanent satisfactions in rural life, and who wishes the training which will equip him to make a living from the natural resources to which as an Indian he possesses title. Second, the Indian from a rural area who has lived in close association with Whites and who wishes training in the industrial or mechanical trades which will permit him to go into urban areas and become part of the main stream of White urban life. Third, the Indian youngster from a broken home who finds in the Indian boarding school a home as well as an educational institution, and who may train for either type of vocational future. And lastly, the Indian child who aspires to a college education and professional training. The reservation high schools of the Indian Service concentrate primarily on a vocational program designed to exploit the major advantages of rural living, while the nonreservation schools are concerned primarily with preparing Indians for nonreservation life.

The program of Indian education is naturally subject to many outside pressures. It is the conviction of many friends of the Indians that he should be prepared as rapidly as possible "to enter the main stream of American life." People who talk this way usually live in cities, and take it for granted that that is the American way. They ignore completely that more than half of all Americans are rural in origin. Ten years ago the high schools of the Indian Service were greatly concerned with the training of Indian youngsters for urban vocational employment. In 1938 the Indian Service began a survey of occupational opportunities offered to students graduating from Indian secondary schools, in an effort to make a realistic evaluation of the curricula of these schools and to adjust their programs to the actual opportunities available to Indian youth. These studies began with a follow-up of graduates and drop-outs of the schools over a period of eight years, and extended to an analysis of the cultural, social, and economic backgrounds of students, and the possible opportunities available to them. Four exhaustive surveys were completed. The first dealt with two reservation boarding schools in South Dakota. The second dealt with Sherman Institute, a nonreservation boarding school in California enrolling pupils from the entire state. The third covered the nonreservation school at Phoenix, Arizona, whose students are drawn from the Arizona reservations. The fourth covered three major nonreservation schools in Oklahoma and Kansas—Haskell Institute which offers training for urban life, the Chilocco agricultural school which prepares for rural living in Oklahoma, and the Sequoyah school which deals with orphan pupils from the economically backward areas of eastern Oklahoma.

Perhaps the most important fact revealed by these studies is that many Indian students tend to return home upon completion of their school work and to take up life within their own communities. The only area in which this trend was not marked was Oklahoma in which more than half of the students studied had broken away completely from their point of origin. Among the Sioux of the Dakotas 98 per cent of the students were trying to make a living on the reservations, within two years of graduation. In California where the school had been successful in finding industrial employment for more than 50 per cent of its graduates, a high percentage automatically gave up good paying employment in the cities and returned to the rural areas because they preferred that kind of life.

The Phoenix students, like those in California, came from backgrounds considerably more varied than the Sioux. The Pimas are agriculturists, and were engaged in irrigation farming when first discovered by Whites. The Papagos live on desert land in the extreme southern part of Arizona. The Apaches are stockmen. The Hopi, who live on high mesas in the semi-arid areas of Arizona have developed an unique economy, producing fruit, vegetables, and grains with primitive but highly effective techniques. Yet the majority of pupils from each of these groups tended to return home, preferring to take their chances with their less fruitful resources than accept the competitive drive of the White man's urban living.

It is apparent that any realistic conception of a program for an Indian school must recognize that Indians have always lived, and for a great many years will continue to live, in rural areas. The question must therefore be asked: What occupational opportunities do their home communities offer young Indians? In the heart of the reservation areas our study revealed that there was very little demand for men who had acquired skills as painters, automobile mechanics, shoe cobblers or masons, for very little work of this kind was done in these rural areas. Further there was very little opportunity for employment in private industry, for there are few business enterprises such as stores, dry cleaning establishments, or barber shops able to succeed in the rural environment. It was apparent that in many areas among the Sioux in the Dakotas and among the Apache in Arizona, the resources and temperament of the people are best adapted to cattle raising. Appropriate use of their land offers the greatest opportunity for economic success to the young Indians of these areas.

Among the Navaho of Arizona it became apparent that the educational program faced two radically different yet equally important demands. First, in order to survive on the 25,000 square miles of Arizona desert which was their home, it was essential for the Navaho people to acquire the latest modern skills in the conservation of water and soil and in the careful upbreeding of their livestock in order that their barren acres be put to the most fruitful use. It was equally apparent that in an area populated by 50,000 or more Indians increasing in population by more than a thousand a year, these limited resources were inadequate for their continued basic support, and that about a third would have to be prepared for adjustment into economic activity away from the reservation.

From what has gone before it should be apparent, first, that there is the greatest diversity among the various Indian groups, despite the uniform pattern of retention of Indian language and culture patterns, and the general preference for rural living. It is apparent that the wisest judgment needs to be used in guiding Indian youth toward effective exploitation of reservation resources or toward adaptation to urban industrial life. The Indian land resources are not adequate to support the Indian population, but are nevertheless rich and as yet inadequately used by Indians. Training of Indian youth toward the maximum effective use of these resources will clearly improve the economic standards of the Indian population.

At the same time the Indian finds a diminishing land base and a rapidly increasing population. It is important that the vocational schools of the Indian Service not only equip such children with the skills with which to make a living in urban America, but also prepare them psychologically to find satisfaction in such urban home living. Here and there where such preparation has been adequate the transition has been successful, but without adequate preparation the trend has been for the students after a few years to return to the friendliness and the familiarity of the home area. One of the problems involved in the psychological preparation for urban experience has been training for adequate and constructive use of leisure time. Graduates who are distinctively Indian have often found themselves confronted with a certain amount of nonacceptance; not prejudice, but simply a lack of common basis for friendships. To fulfill the objectives of better rural living on the reservations attention must be given to recreation and wise use of leisure time. No successful effort has yet been made to provide for constructive recreation to replace pagan ceremonials which have been discouraged by missionaries.

In several areas the vocational emphasis in Indian Service high schools is on cattle raising, the handling of small livestock, home gardening, and the raising of winter feed. Each of these schools possesses grazing and farming areas, and operates practical herds of beef, dairy cattle, hogs and poultry. Milk goats and sometimes sheep and rabbits are a part of the program. The boys are trained in beef and dairy cattle management, and the girls are given training in the production of the smaller livestock. Boys engage in farm work, and the girls in gardening. Each youngster who is trained in this type of work undertakes a project in which he has a personal economic interest and he benefits from the success of his activity.

In the industrial trade schools, broad general courses offer wide experience in related trades, rather than finding courses scattered through many shops, and permit specialization in one or another skill during the last one or two years. During the depression, in order to bridge the transition between graduation and some form of active employment, a number of high schools provided a post high school year of full time vocational training, during which the pupil devoted the entire day to the practice of his chosen skill. A majority of students who returned for this additional training were placed in employment before the end of the year.

With the demand for workers in war industries of even limited skill, this type of advanced training has not been necessary, but it is believed that in the post war period this additional training should provide the maturity essential for responsible employment.

Educational and vocational guidance in Indian schools is the major responsibility of the boys' and girls' advisers. In most of the larger schools the service is developed through a committee organization appointed by the principal, and includes the major instructors in vocational subjects. In the reservation high schools the committee is augmented by the addition of several leading Indian residents of the reservation, and at times by agency employees who are in a position to be familiar with the vocational opportunities of the area or with the individuals being counseled. Many of the schools are building record files of all students entering high school as freshmen and continuing these files for a number of years after the students graduate or drop out of school. In this way it is possible to check the vocational advice given against what happens to the student. Increasingly these records are being organized on an anecdotal basis so as to obtain specific and objective evidence of pupil reaction. These guidance committees are required to report on candidates for educational loans which the government provides to encourage advanced vocational and collegiate education, and a coordination of the work of advisers and guidance committees is being developed through the Loan and Guidance Section of the Central Office of the Indian Service.

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W. W. B.

INTELLIGENCE QUOTIENT *(I.Q.)*. The intelligence quotient or I.Q. is obtained by means of the formula:

$$\text{I.Q.} = \frac{\text{M.A.}}{\text{C.A.}} \times 100$$

Mental age (M.A.) represents the level of mental ability that a person has attained without regard to chronological age. After age norms are established, items are located on a mental age scale. A properly placed item is one which is failed by most persons in younger age groups and passed by almost all persons in older age groups. The intelligence quotient is an indication of how a subject stands with reference to the rest of the population. By definition, the average I.Q. is always 100.

Since the abilities measured by our intelligence tests do not increase throughout life, reaching maximums between the ages of fifteen and twenty in most individuals, it is necessary to hold chronological age of adults constant in the I.Q. formula, if absurdities are to be avoided. If this were not done, a man with a chronological age of sixty and a mental age of fifteen would have an I.Q. of 25 and would be classified an imbecile.

Terman and Merrill,[1] in computing I.Q., report chronological age in full up to thirteen years of age and score all ages beyond sixteen as sixteen. Between thirteen and sixteen, thirteen is used as a basal age and two-thirds of the additional years, up to sixteen, that a person has lived, are added. Thus, according to this scheme, the maximum chronological age is fifteen.

In most cases, the M.A. and the C.A. are not even numbers, including months as well as years. The simplest way of handling such problems is to convert the years to months. For example, a boy with an M.A. of twelve years, two months and a C.A. of fourteen years, three months has an I.Q. of 85:

$$\frac{146}{171} \times 100 = 85 \text{ I.Q.}$$

Two persons with the same I.Q. rating may differ considerably from each other in terms of the mental abilities they possess. This is due to the fact that "intelligence" is not a unitary trait, but a composite made up of a number of somewhat different factors. One person may do very well on language items and the other may excel on quantitative problems and both may achieve the same M.A. rating; if they are of the same C.A., they will receive identical I.Q.s.

By definition, the M.A. of a test performance is the C.A. at which it is average. If an adult subject is above average in intelligence, then there is no age at which his score is the average. Therefore, M.A. and I.Q. ratings cannot be assigned to superior adults without violating the accepted definitions of these terms. Some test authors, bowing to the popularity of the I.Q., have arbitrarily designated certain superior performances as equivalent to higher M.A.s, but in doing so they have redefined M.A. Percentile ranks and standard scores are much better than I.Q. ratings for representing the standing of superior adults. For that matter, they are preferable in expressing the results obtained with children, since they give much more accurate information regarding relative position than does the I.Q.

Assuming that the high scores are not achieved by guessing, cheating, or as a result of previous experience with a particular test, high I.Q.s are more trustworthy than low or mediocre ones, since high scores could not have been achieved on any basis other than that of superior intelligence. On the other hand, low or mediocre scores are sometimes due to poor motivation, ill health, inappropriateness of the test, and other factors. However, it is recognized that millions of people are subnormal and almost half of the population falls within the I.Q. range 90 to 109. In view of the importance of intelligence ratings in the selection of vocational objectives, it appears desirable to retest a person who has achieved a low score, particularly if the case history does not support the test results. In such cases, it is recommended that a different test or another form of the same test be used at a later date, if possible.

The following information may be of value to counselors using the I.Q.:

1. Although there is considerable fluctuation in I.Q. after the age of six, it is not as pronounced as during the pre-school period. Many methodological difficulties have clouded the results of investigations on the permanency of the I.Q. However, it now appears that bright children tend to hold or increase their ratings and feebleminded ones frequently exhibit decreasing I.Q. with advancing C.A. The feebleminded usually attain their maximum M.A.s sooner than do normals.

2. The correlation between I.Q. and scholastic success decreases from approximately .75 in the elementary school to .60–.65 in the secondary school and .50 at the college level. This steady drop is primarily due to the increasing homogeneity of school groups.

Reference:

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O. J. K.

INDUSTRIAL TRAINING CLASSIFICATION TEST, PURDUE. This test, constructed by C. H. Lawshe and A. C. Moutoux "is designed to select those persons who are most likely to profit from an industrial training program. It is designed to evaluate an individual's ability to read simple measurements and solve simple arithmetical problems involving fractions, decimals, and the conversion of decimals to common fractions." The test has two forms (A and B) which are identical and consists of 23 items. It is divided into four parts each of which is based upon a simple drawing. Part I is composed of problems testing the individual's ability to read a scale. Part II deals with the addition and reduction of fractions. Part III is concerned with problems involving simple operations with whole numbers. Part IV consists of problems involving the use of decimals.

The test purports to measure basic skills necessary for success in vocational schools, industrial arts, industrial training programs and war work training programs. In combination with tests of manipulative dexterity and sense of space relations, the authors deem it to have high predictive value for school and industrial work training programs. In addition, the test was adapted so that it would prove useful in the selection and classification of adult trainees, particularly on the pre-employment level.

The directions are printed on the face of the test which is self administering. Because it was primarily designed as a test of power rather than speed, the time limit was set at 35 minutes, which is more than adequate. The authors suggest that with specific groups, the time limit may be shortened. The scoring is simple and consists of totalling the correct number of responses thus obtaining a raw score which is converted into percentile rank by the use of the table of norms given. The norms are based on a male population.

Coefficients of reliability as determined by correlating the scores on Form A with Form B ranged from .73 to .94. The range is explained on the basis that the ability within the groups tested varied. For 195 cases considered as a single group the coefficient of reliability was .83. The use of the Spearman-Brown formula yielded a coefficient of .91.

Validity was measured by comparing the test scores of 279 trainees in three vocational programs with ratings of teachers with regard to probable vocational success. On the basis of ratings, the trainees were grouped into the upper 25%, the middle 50% and the lower 25%. The mean test scores increased regularly and the difference between the extreme groups was found to be statistically significant.

Preliminary percentile norms are given for the interpretation of scores. They are based on 7 groups of male subjects: 184 NYA trainees, 453 War Production trainees, 82 Trade School applicants, 163 High School sophomores, 811 Navy trainees, 82 Trade School students and 100 Navy teacher trainees.

The test is published by Science Research Associates, Chicago, Illinois.

Reference:

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H. B. H.

INFORMATION, OCCUPATIONAL. Too many young people leave school for employment without knowing very much about the world's work or even what local workers do. During the war, the demand for the services of youth opened many jobs at high wages with a short time point of view. Since the war competition for jobs changed the occupational picture and young people in school are now considering work that offers a future rather than temporary high wages. It becomes increasingly important, therefore, for schools that help youth plan their vocational future to have available up-to-date information about many fields of work, and how to prepare for such opportunities. Pupils gain an early knowledge of occupations largely through the classroom teacher and the services of a school guidance program. Some progressive teachers are attempting to relate their subjects to occupations by teaching occupational units in the classroom. She looks to the counselor or other sources for information and help. The counselor seeks every source available to supply occupational information to the school staff and students. In small schools the principal often has the responsibility for giving occupational information and attempts to collect and digest materials useful in his locality. Likewise, veterans' counselors, adult counselors, and agencies are helping point the way to jobs and training opportunities.

School subjects generally consist of the traditional academic or vocational courses, but there is a trend toward teaching where these subjects lead in the labor market, or how they are applied in industry. Occasionally a bulletin appears that shows the relationship of courses of study to vocations, as for example: *What to do in the World's Work,* a bulletin of vocational information for Hunter College students (N. Y., April, 1941); and *School Courses and Related Careers,* a vocational survey plan by Bacher and Berkowitz, published by Science Research Associates (Chicago, 1941). Educators encourage young people to study with a purpose. One of the important purposes of education is to prepare students for employment whether as wage earners in industry or as homemakers in families. The schools have been slow to teach occupational life to the students, but outside agencies have long been busy producing occupational materials designed to enlighten young people about jobs.

In recent years hundreds of books and pamphlets have been published describing occupations and preparation for them. Such materials are useful in vocational guidance both for the counselor himself, and for students who wish to be informed about different fields of work. Through such sources students and others who are choosing occupations, or improving their own occupational programs, find excellent information about opportunities, requirements, duties, hours and pay. Two periodicals attempt to list such publications as they appear—*Vocational Guide* and *Occupational Index.*

Monographs on occupational information are usually written from three points of view: (1) National, (2) State, and (3) Local. National agencies write about the picture of an industry or occupation for the whole United States. As far as a State or community is concerned the findings may or may not apply depending upon the nature of the work and its geographical location. State agencies concern themselves with opportunities within State lines, and local agencies promote local industry by interpreting National and State summaries for residents. The National studies are most important because they are often thorough and furnish many details that can be found out only through the expenditure of considerable research money. The State and local studies are often well done, for the fields covered, but they are not extensive in their coverage.

Such evaluation must be made of occupational monographs and researches, if they are to be used for school work. While some are very useful, many are of doubtful value in the classroom. The National Vocational Guidance Association (NVGA), Occupational Research Section has proposed an evaluation scheme published in *Occupations Magazine,* November 1939—"Distinguishing marks of a good occupational monograph": "To assist the large number of counselors and teachers to evaluate occupational material which is brought to their attention, the Occupational Research Section of the NVGA has prepared "Criteria of a good occupational study." The criteria concerns methods of gathering data, content of study, and style and format of the monograph. "The scientific approach should be manifest throughout; in the methods used in gathering the facts; in the unbiased accurate presentation of what was discovered, whether favorable or unfavorable; in the obvious intent to serve, not special and limited interests, but the well-being of young people."

For those who wish to write monographs on occupations the same association published in *Occupations Magazine* (October, 1940) "Content of a good occupational monograph—the basic outline." This outline indicates the content that should be found in a complete occupational monograph. Briefly the major headings (the order of which may be changed) include:

History of the occupation
Importance of the occupation and its relation to society
Number of workers engaged in occupations
Need for workers
Duties
Qualifications
Preparation
Methods of entering
Length of time before skill is attained
Advancement
Related occupation to which job may lead
Earnings
Hours

Regularity of employment
Health and accident hazards
Organizations
Typical places of employment
Supplementary information

Among the agencies both public and private that produce occupational publications are the following:

Baltimore Department of Education, Dept. of Guidance & Placement, Baltimore, Md.
Bellman Publishing Co., 6 Park Street, Boston, Mass.
Commonwealth Book Co., Chicago, Ill.
Morgan-Dillon & Co., 5154 N. Clark St., Chicago 40, Ill.
National Roster of Scientific and Specialized Personnel, Dept. of Labor, Washington, D. C.
Oakland Public Schools, Oakland, Calif.
Occupational Index, Inc., New York University, N. Y.
Bureau of Labor Statistics, Department of Labor, Washington, D. C.
Women's Bureau, Department of Labor, Washington, D. C.
Rochester Institute of Technology, Rochester, N. Y.
Science Research Associates, 228 So. Wabash Ave., Chicago 4, Ill.
U. S. Employment Service (Industry series), Department of Labor, Washington, D. C.
Western Personnel Service, Pasadena, Calif.
Bureau of Foreign and Domestic Commerce (Small Business), Dept. of Commerce, Washington, D. C.

A great deal of occupational information is available in pamphlet form from various sources at low cost. When it is kept in systematic order it becomes an asset in any situation. In order to find unbound materials readily when wanted, some kind of an occupational file is usually provided. A good file is expandable to take care of new materials, and is most useful when pupils themselves have access to it. Young people who use such a file, often prefer an alphabetical arrangement where they can find under the A's such occupations as architect, artist, actor, and under the B's—bookkeeper and bricklayer. Generally two or three hundred references can be filed according to the alphabet, but more extensive filing systems are based on some kind of classification or coding system.

The classification offered in the *Dictionary of Occupational Titles* is standard and has been adapted for filing occupational materials. The dictionary and its 1945 supplements define 35,951 occupational titles of which 9,611 are coded. The brief summary below shows the coverage of these occupations in groups.

0—Professional and Managerial	Professional Semi-professional Managerial and official
1—Clerical and Sales	Clerical and kindred Sales and kindred
2—Service	Domestic service Personal service Protective service Building service workers and porters
3—Agricultural, Fishery, Forestry, and Kindred	Agricultural, horticultural and kindred Fishery Forestry (except logging, hunting and trapping)
4 and 5—Skilled	
6 and 7—Semi-Skilled	
8 and 9—Unskilled	

Each of these seven major headings is divided into sub-groups, either under a generic occupational title such as *baking* or under an industrial grouping such as *baking industry*. The classification and coding system is described in detail in the introduction to the *Dictionary of Occupational Titles*, Part I, and supplement III. These may be obtained from the Superintendent of Documents, Washington, D. C. at $2.00 and $1.25 respectively.

Many occupational publications find their way to the school library or to the counselor's shelves, where they are read and studied by the pupils. Most educators and parents agree that the information contained in such occupational publications should find a place in the school curriculum as a part of instruction and there is a definite trend in this direction. Most schools already have full programs that make it difficult to insert a regular semester course of study of occupations, but units of study of a few weeks in length are being introduced in different subject-matter courses in many schools.

For example, in some English classes students learn the proper way to write letters of application for jobs, to fill out application blanks in the accepted manner, and to apply for work in person. Likewise, they study jobs that depend upon written English, upon spoken English, or upon English style.

In some mathematics classes students learn why they study algebra or geometry, and what occupations require a mathematical background. For example, the chemist solves many of his problems by ratio and proportion, and the contractor gets a job because of his ability to estimate fairly the cost of construction of repair work.

Likewise in the social studies classes teachers introduce occupations as a unit of a few weeks to show relations of vocations to social progress. Civics classes often cover a few of the major fields of work. In science classes where most of the time is devoted to learning scientific procedures, teachers are beginning to acquaint their students with information about occupations and industries in which scientific procedures are used.

The schools and libraries are the best sources for young people to obtain occupational information, but even these agencies are seldom equipped to answer all of the questions that are put to them by inquiring youth. Veterans are separately provided for by the Veterans Administration that maintains several counseling centers in every State. A few private counseling agencies or "clinics" in large cities charge a fee for their services. The U. S. Employment Service with many offices everywhere in the United States maintains a free placement service where occupations are discussed with a view to employment.

W. J. G.

INJURIES, WORK, IN THE UNITED STATES

The Over-all Picture

The magnitude of the problem of occupational injuries in this country is indicated by the fact that in the single year 1945 there were over 2 million such injuries. Nearly 1,600,000 of these involved employees. The remainder constituted self-employed workers. About 16,000 persons died as a result of their injuries, and another 84,500 suffered permanent impairments. The main bulk of the injuries, over 1,900,000, consisted of temporary disabilities which incapacitated workers for 1 or more days. In the manufacturing group of industries, this type of disability averaged about 17 days per case.

The monetary cost of work injuries runs into several billion dollars annually, when allowance is made not only for the cost of insurance to employers and wage loss to the workers, but also for the indirect costs of accidents, such as those resulting from damaged machinery and materials and the slow-down effect on fellow workers.

A more definite estimate of the economic effect of these injuries on production is possible in terms of the employee-days lost. If allowance is made only for the time actually lost from work, and without taking into account the economic value of lives shortened by death or impaired because of the loss or loss of use of major body members, the time lost during 1945 is estimated at 41¼ million man-days, the equivalent of full-time annual employment for 137,000 workers. If allowances are made of the economic costs of deaths and permanent impairments, this figure rises to 218 million days, or the equivalent of full-time employment of 725,000 workers. To complete the picture, at least 9 million more days must be added for time lost for first-aid or medical attention to minor injuries.

In the main, the injury experience of an industry depends on two major factors: (1) The number of persons employed in the industry and (2) the degree of hazard. In any one industry the number of work injuries during a year will tend to vary with the average employment during the year, and variations from year to year are explainable largely on the basis of changes in average employment. This is generally true because changes in the incidence of work injuries—whether for better or worse—are gradual over a period of years.

There are also vast differences between individual industries as to work hazards. The most hazardous industry for which we have records is stevedoring and longshoring. One of the least hazardous industries, on the other extreme, is the manufacture of women's clothing. The emphasis, from here on, will be on industries which have high accident rates.

Longshore Industry[1]

The industry with the worst known accident record in the United States is the longshore industry, concerned with loading and unloading of ships.

Despite the fact that everyone connected with the longshore industry seems fully aware that the operations are very hazardous, there is little evidence of any serious attempt at accident prevention. Because of the peculiar hiring system in this industry, under which men are engaged for the loading and unloading of individual ships and consequently are employed intermittently by individual employers, the employers apparently feel no responsibility toward their workers. In fact, in spite of the obvious necessity of maintaining first-aid facilities, many of these longshore contractors do not even provide this fundamental service.

Throughout the industry the attitude toward safety appears to be that it is highly desirable because of the bad accident record of the industry. In practice, only a few individuals appear to be willing to spend the time and effort to do anything about it.

The most hazardous occupation is that of the hold men, who, as the name indicates, work in the hold of the ship and consequently are exposed to the dangers of being struck by swinging loads or by objects falling from suspended loads. Warehousemen, dockmen, hand truckers, and car loaders also experience high accident rates in the order cited.

Logging and Lumber Mills[5, 8, 9]

Logging, sawmill, and planing-mill industries have long been conspicuous for high rates of disabling injuries among their workmen. Particularly is this true in logging. The accident rate in this industry is about twice as high as that in the other two.

Axes, saws, and other hand tools were the most frequent causes of injuries in logging operations. Less frequent, but usually much more severe, were accidents which resulted from falling trees, limbs, and branches of trees, or from moving logs.

In all of the woodworking operations, the loading and unloading of lumber exposes workers to a variety of hazards such as strains from lifting, being struck by falling lumber, lacerations from splinters, etc. Many of the shaping and forming processes in sawmills and planing mills involve the use of sharp cutting tools, a large number of which are power-driven and operated at high speeds. As operators must work close to the cutting parts, the absence of adequate guards and incorrect feeding of stock through the machines create hazards which frequently result in lost fingers or hands.

Coal Mining

Coal mining, in terms of disabling injuries, ranks about half way between logging and sawmills. Roughly speaking, during the course of a year about 125 out of every thousand bituminous-coal miners and about 165 out of every thousand anthracite miners will suffer a disabling injury. Many of these injuries result from cave-ins of roofs, poor timbering, and from contact with coal cars and various kinds of power-driven tools used in the modern methods of coal mining. Fatalities in coal mining are higher than in most other industries in proportion to the total injury experience. A single coal-mine disaster may claim the lives of as many as 100 or more miners.

Agriculture

Although estimates indicate that the 10,000,000 people engaged in agriculture in the United States suffer more than 300,000 disabling injuries a year—out of which 4,500 are fatal—relatively little is known about causes of accidents on farms. Obviously, there are dangers from contacts with livestock as well as the variety of farm machines and other utensils used in agriculture. Manufacturers of farm equipment, however, have shown an inclination to pay greater attention to safeguarding the equipment which they manufacture and in adequate instructions to farmers.

Foundry Industry[2]

About the only operation in foundries which is not hazardous is that of molders. Chainmen are frequently injured by metals falling from craneloads and from loads which are lowered directly upon them. Chippers are frequently injured by flying metal particles set into motion during the process of chipping surfaces of castings with chipping hammers and chisels. Grinders frequently experience eye injuries—usually because they do not take the precaution of wearing goggles. Ladlemen and pourers, who transport the molten metal from the melting furnace in a ladle and pour the molten metal into the molds, are exposed to the hazards of burns resulting from the splashing and spilling of molten metal.

Construction[7]

The hazards in the construction industry vary with the type of construction involved. The incidence of disabling injuries is highest on heavy construction, such as that involving bridges, dams, etc., with highway construction running second and building construction third. In each of these three types, the one single outstanding cause of disabling injuries is being struck by falling objects. Falls from elevated surfaces, frequently from insecure scaffolding, stepping on nails or insecurely placed objects are other outstanding causes.

Slaughtering and Meat Packing[3]

The hazards to workers in this industry vary widely and depend on the specific operations of a particular department. Some hazards, however, pervade the entire industry. Grease carried on the workers' shoes frequently makes slippery floors and stairways a hazard throughout the entire plant. The slipping hazard is increased by the free use of water in the cleaning of floors and equipment, as well as in the washing of carcasses.

Although the use of mechanical conveyors is widespread, many of the products and trimmings must be transferred from place to place in hand trucks. The movement of these trucks presents a hazard to all employees who use the passageways or work near them. Frequently the poor maintenance of these floors and poor housekeeping in the aisles greatly increase these hazards. Knives are used in nearly all of the operating departments and present a frequent source of injury.

The principal danger connected with livestock handling consists of forcible contact with animals, falls on irregular and slippery surfaces, and the pains and strains resulting from the handling of feed and water for the animals. In the dressing departments there is the hazard of being struck by kicking animals or being struck by parts of carcasses as they move on mechanical conveyors or are dropped to lower floors by means of chutes. There is, of course, always the danger of injury from sharp knives—held either by the workers himself or a co-worker. In addition, these accident risks result from the use of slicing and grinding machines.

Breweries [4]

In the brewing industry the most hazardous operations relate to the transportation and storage of filled barrels and kegs. The lifting and handling of these heavy barrels frequently is performed manually, with the result that strains and sprains are relatively common.

Bottling operations, generally highly mechanized, involve comparatively little physical exertion, and are frequently performed by women. Many of the injuries involved in these operations result from bottle explosions. These present a double hazard because the flying glass may strike anyone in the vicinity, and may cause cuts to the hands as the broken glass is removed from machines, conveyors, or the floor. The most hazardous operation in the bottling division, however, is pasteurizing.

Accident Proneness

A number of studies have revealed the fact that frequently a small number of employees account for a disproportionately large number of disabling injuries. For example, a study of injuries in shipyards indicated that about 8,600 employees were involved in approximately 23,200 injuries. More than half of these workers reported two or more injuries during a 12-month period. Nearly 11 per cent had six injuries each, and nearly 3 per cent had 10 or more injuries per worker. Six individuals, in fact, each had 24 or more injuries during the year. In a study of accidents in the slaughtering and meat-packing industry, a group of 330 employees were found to have experienced a total of nearly 1,300 injuries. Within this group, 53 workers had from 6 to 10 injuries during the year, and 29 had more than 10 injuries each. One person had as many as 31. In the study of accidents in breweries, a group of workers comprising 11 per cent of those who were injured during the year accounted for 51 per cent of all accidents. In the bottling department, a small group of 13 workers, representing 1.4 per cent of the number of employees in the department, had 984, or 10.5 per cent of all bottling-department injuries. In another department, a small group of 10 employees, constituting 2.8 per cent of the total employment in the department, experienced 407 injuries, or 25 per cent of all the injuries in this department.

In view of the fact that these employees were doing work similar to that of others around them, the possible explanation about these persons performing unusually hazardous work cannot be accepted as the reason for very unsatisfactory accident experiences. In some instances, this experience may be related to clumsiness or to the lack of physical coordination. In others, the cause may be psychological. There is no question, however, that there are accident-prone employees, and that it is important to place such workers in types of activities which will not be harmful to them once their tendency to be injured has been established.

Industrial Injuries to Women [10]

The widespread use of women employees, during the war years, at tasks not normally performed by them in peacetime, afforded an opportunity to study the accident experience of women in a way that had not been possible up to that time. Surveys conducted in several types of manufacturing as well as in shipyards led to the following conclusions:

1. In heavier types of work, such as assembling, welding and burning, which require considerable moving about, climbing, and working in awkward or strained positions, women's accident experience was worse than that of men. Evidences of this fact are the comparative frequency rates of men and women doing identical work. Male welders averaged 41.3 disabling injuries per million hours, whereas women welders averaged 64.6, or half again as many. In one of the 9 shipyards studied, the rate for women welders was 123.4. In assembly work, men had an average frequency rate of 58.5, and women a rate of 74.6.
2. At light, repetitive work, the injury experience of women

was nearly the same as that of men. In the electrical shops of the shipyards studied, the frequency rate for men was 35.6, and that of women 39.1.

The reasons for the adverse experience of women workers at heavy work appeared to be partly anatomical and partly a matter of their habitual activities. Women are not so heavily boned or muscled as men and consequently are less able to lift heavy weights or climb about as readily on elevations. Their muscles are not accustomed to this type of work, although much of this difficulty can be overcome with continual practice.

In manufacturing plants, in which women are frequently assigned to the lighter and less-hazardous operations, and have fairly continuous supervision, the following conclusions were reached: Women work as safely as, or more safely than, men because they are more likely to follow instructions closely, they are more concerned about their appearance and more afraid of getting hurt, they are anxious to prove themselves as good as the men, and they are less inclined than are men to "show off" by taking unnecessary chances before either members of their own sex or those of the opposite sex.

Age and Industrial Injuries [6]

One of the objections raised by employers against the employment of older workers is that they are greater accident risks. An analysis of four large establishments, the data of the Wisconsin Industrial Commission, and the experience in Switzerland and Austria indicated, however, that workers over 50 years of age are not injured more frequently than workers in the lower age groups. In fact they frequently had better accident experiences. One reason for this, obviously, is that the older worker has established safe ways of working, is more mature in his judgment, and has acquired greater skill. Nevertheless, when the older worker is injured his period of recuperation is longer and the proportion of injuries which result in death or permanent impairments is higher. The relative cost of less frequent injuries to older workers, but injuries which are of greater severity, as against the more frequent injuries of lesser severity to younger workers, still needs to be determined.

The Physically Impaired

Much of the objection to the employment of permanently impaired workers is the belief that because of their impairment they are a greater accident risk than the able-bodied person and that they represent a hazard not only to themselves but also to their fellow workers. Preliminary results of a survey by the United States Bureau of Labor Statistics indicate that impaired workers are no more accident prone than their nonimpaired fellow workers. As a matter of fact, their injury experience is frequently better because of the greater caution exercised by them out of fear that another injury may disable them completely.

Basic to this whole problem, of course, is the proper placement of the impaired worker. It is essential, in order to gain best performance, that the impaired worker be placed in a job in which his impairment is not a handicap. As proper placement is a fundamental point in any good personnel policy, the placement of impaired workers merely presents an additional item to be taken into consideration. For example, while a one-legged person would be at a disadvantage at a job requiring two good legs, there obviously is no reason why a one-legged person working at a bench or machine which requires the use of two good arms is any more of an accident risk than a man who performs the same work and has two good legs.

There is, of course, always a possibility that an impaired worker will be injured and may suffer a second permanent impairment which may make him completely unsatisfactory for further industrial employment. About 33 States now have second injury funds under which an employer is liable only for the injury incurred in his establishment, with a second injury fund—administered by the State—taking care of the difference between the amount so payable and the compensation due the employee for permanent total disability.

With such legislation, and with a sound personnel policy which emphasizes proper placement—not only of the impaired, but of all employees—an employer has no reason for regarding the impaired person as inferior or undesirable.

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2. Bull. 805. Injuries and accident causes in the foundry industry, 1942.
3. Bull. 855. Injuries and accidents causes in the slaughtering and meat-packing industry, 1943.
4. Monthly Labor Review. Work injuries in breweries, 1944. Monthly Labor Review, August, 1945.
5. R. 1184. Causes and prevention of accidents in lumber manufacturing, 1939
6. R. 1191. Relation of age to industrial injuries.
7. R. 1199. Causes and prevention of accidents in the construction industry, 1939.

8. R. 1386. Causes and prevention of accidents in logging and lumber mills, 1940.
9. R. 1491. Causes and prevention of injuries in the manufacture of lumber products, 1941.
10. R. 1738. Industrial injuries to women workers.

(All of the above references published by Bureau of Labor Statistics, U. S. Department of Labor, Washington, D. C.)

M. D. K.

INSTITUTE FOR RESEARCH. The Institute for Research, located at Chicago, Illinois, was established in 1929 for the purpose of carrying on nation-wide occupational research and providing high school and college students with the type of information about jobs which would give them a bird's-eye view of the principal fields of endeavor. And at the same time, the purpose was also to provide just the kind of detailed and intimate information about each particular job that young people not yet in the business and professional world want to know—the kind of information they would get if they could talk the job over with people already engaged in such work.

The series of monographs produced by the Institute as a result of its studies is made available under the title "Careers Research Monographs." These monographs are not theoretical or academic. They state the facts about a job as they exist.

The Institute for Research is a pioneer in the field of providing vocational information. It is the first to publish such information as a result of extensive, nation-wide research in the fields covered, not a rehash of library information. The information is authentic and reliable because gathered at the source—the job itself and the duties performed in it as developed in actual practice.

The Institute for Research has surveyed more than 150 fields of work and has published more than 150 separate monographs covering as many fields. A total of more than 800 distinct types of jobs are covered. These publications contain an abundance of detailed and accurate information on a wide range of occupational opportunities. The job information in each monograph deals with the attractive and unattractive sides of the occupation; education and training required; opportunities at the start; ultimate opportunities; personal qualifications required; source of income—whether fees, commissions, or salary; average earnings; maximum earnings; a word picture of a typical day's work; how to get started in the occupation, and the approximate capital required, if any. The monographs are individually bound and contain more than 280 illustrations. Examples of the fields treated are indicated by a partial list of titles.

Accountancy
Advertising
Advertising Copy Writing
Agriculture
Air Conditioning
Animal Husbandry
Civil Engineering
Credit Manager
Dentistry
Diplomatic Service
Dry-Cleaning Industry
Electrical Engineering
Farm Management
Fashion Designing
Government Service
Home Economics
Hotel Management
Librarianship
Mechanical Engineering
Men's Furnishing Store Operation
Motion Picture Theater Operation
Mortuary Operation
Nursing
Osteopathy
Pharmacy
Physical Therapy
Public School Administration
Real Estate Management
Sanitary Engineering
Teaching
Traffic Management
Vocational and Educational Counseling
Women's Apparel-Shop Operation
X-Ray Technician

INTELLIGENCE TESTS

Army Alpha Intelligence Examination, Schrammel-Brannan Revision.

General Statement

The Army Alpha Intelligence Examination for many years was the most popular group examination for high school and college students and other adults. Because of the popularity of this test and also because of its high reliability and validity, a revision was undertaken in 1935. Three forms of the edition called the Schrammel-Brannan Revision: Army Group Examination Alpha were set up from the items of the original five forms. These new forms were equated, item by item, by exact statistical procedures. The eight parts of the original test were retained, but revised so that giving was simplified, and scoring can be accomplished with greater ease and at a saving of about forty per cent of time. Part I was modified in order to facilitate ease and uniformity of administration and to insure greater reliability of results.

Authors and Publishers

The authors of this test are H. E. Schrammel, Emporia, Kansas and Christine V. Brannan, Austin, Texas; the publisher is the

Bureau of Educational Measurements, Kansas State Teachers College, Emporia, Kansas.

Validity

Since the forms of this examination utilize almost entirely the more valid items from the five forms of the original Army Alpha scale, the new test presumably equals it in validity. To obtain an objective index of validity for this test, however, an independent criterion was established. Three tests were administered to 92 pupils, grades IV to IX, and the average mental age scores thus obtained were considered the validity criterion. The three tests used were the Stanford Revision of the Binet Scale (1916 revision); the Otis Group Intelligence Examination, Advanced, Form B; and the Schrammel-Brannan Revision: Army Group Examination Alpha, Form A. Between the scores of the Revised Army Alpha Test and this criterion a coefficient of .93 ± .01 was obtained. Otis scores correlated with this criterion yielded a coefficient of .95 and Stanford-Binet scores, one of .91.

To provide additional comparative data several other correlations were computed from the scores obtained in this experiment. These yielded the following coefficients: Revised Army Alpha and average mental age scores of Stanford-Binet and Otis test, .84 ± .02; Revised Army Alpha and Otis test, raw scores, .88 ± .015; I.Q.'s, .79 ± .026; Revised Army Alpha and Stanford-Binet, mental ages, .75 ± .03; I.Q.'s, .71 ± .03.

As all of these coefficients are high and statistically significant, they are indicative of high validity of the revised Army Alpha Examination.

Reliability

Reliability studies were made from papers written by thirteen different groups. These ranged from .82 ± .03 to .97 ± .00, with an average of .90 ± .01.

Testing Range

This examination is particularly adapted for use with junior and senior high school students, college students, and other adults. It has been found excellent for use with all pupils and students from grade four through college, and from age eight to superior adult. It is a valuable instrument for use in vocational guidance, selection, and placement, three equivalent forms, each containing 220 items, have been provided.

Length of Examination

The examinee's working time in taking this test is 40 minutes. As the preliminary directions can be given in two or three minutes, a period of 45 minutes is ample time for administering the test. The examinees work for the total time allotted without being interrupted and distracted by numerous start and stop signals for the separate parts.

Testing Procedure, Scoring, and Interpretation of Results

Directions for administering this test are simple and the test is practically self-administering. Scoring is accomplished by use of a printed key, the time required being about two minutes per test. Raw scores may be converted directly into age or grade percentile scores, and also into mental age scores and intelligence quotients. The norms were computed from the scores of 15,300 persons. Grade percentile norms are provided for grades four to college graduate, inclusive. Age percentile norms are provided for ages eight to 21 inclusive. A special set of percentile norms is also provided for a limited number of occupational groups.

Use of Results

The following suggestions are stated regarding the use that may be made of the test results: for classifying students in school into rapid and slow advancing sections, for determining student load, as a partial aid for determining causes of failure in scholastic work, as an aid in vocational education and counseling, for use in selecting capable students by schools and colleges which are able to limit their admissions and which seek applicants of superior ability, as an aid in selecting applicants for positions in various occupations, and as an aid in classifying workers, in making promotions, and in personnel direction in industrial and Civil Service groups.

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1. 1938 Mental Measurements Year Book, P. 98.
2. Baker, C. W. A study of the validity of the Army Group Examination Alpha, Schrammel-Brannan Revision. Unpublished master's thesis. Kansas State Teachers College of Emporia, 1937.
3. Brannan, C. V. A study of the difficulty of items in the Army Alpha Intelligence Test and suggested revision of the test. Unpublished master's thesis. Kansas State Teachers College of Emporia, 1935.
4. Schrammel, H. E. The Schrammel-Brannan Revision of the Army

Alpha Intelligence Examination. Transactions of the Kansas Academy of Science, Vol. XXXIX. Topeka: Kansas State Printing Plant, 1936. p. 406.

H. E. S.

Arthur Point Scale of Performance Tests. This non-verbal scale consists of two forms. Form I is made up of the following tests: Knox Cube, Seguin Form Board, Two-Figure Form Board, Casuist Form Board, Manikin-Feature-Profile, Mare and Foal, Healy Picture Completion I, Porteus Maze, and Kohs Block Design Test. The original Form II was made up of the Knox Cube (reversed series) Seguin Form Board (inverted), Gwyn's Triangle Test, Paterson's Five Figure Form Board, Glueck's Ship Picture Form Board, Healy Picture Completion II, Porteus Maze Test (maze rotated) and Kohs Block Design Test (designs inverted). This Form II was not as satisfactory as had been anticipated; and so in 1942 the standardization of the Revised Form II was begun.

The Revised Form II consists of the Knox Cube (revised) Seguin Form Board (revised) Stencil Design Test (new), Porteus Maze Test (with a new form at the 4 year level) and the Healy Picture Completion II. At the lower chronological age levels the Revised Form II is reenforced with a modification of the Leiter International Performance Scale, which is practically a non-verbal Binet scale.

The data for the original scales were reported in Volume I, The Clinic Manual, 1930 (Commonwealth Fund) and Volume II, The Process of Standardization, 1933 (same publisher and same price). The data for the Revised Form II are now in the hands of the publisher.

The first Revision of Volume I was published in 1943. It contains additional material under Uses of the Scale, and new tables for use when some of the tests are omitted.

Form I was standardized upon the responses of approximately 1,100 school children of an average American community, of chronological ages 5.0 to 15.9 inclusive. The original Form II was standardized upon the responses of 535 of the pupils who had been tested the previous year on Form I. The Revised Form II has norms based on the responses of 968 pupils of the same district used in standardizing the earlier forms, of chronological ages 4.0 to 15.9 inclusive.

The scores from the various tests in all three forms of the scale were reduced to comparable units and weighted according to their discriminative value by the use of the Woodrow formula. This makes possible extrapolation above and below the age limits of the group used for the standardization of norms.

This scale was constructed and standardized for the purpose of measuring general ability without the use of words. Bishop found that Form I yielded a median I.Q. of 97 for an unselected deaf population in the Saint Paul public schools. An adequate measurement of the ability of deaf pupils is especially necessary for successful vocational guidance.

Indians in the United States have many special abilities in addition to good general endowment. In a recent survey by the Office of Indian Affairs made with the cooperation of the University of Chicago, 670 Indian children earned an average I.Q. of 100.11 on Form I of the scale with much of the form board material omitted. On the Revised Form II 17 pupils at the Pine Ridge Indian School earned a median I.Q. of 102. These ratings are more useful for vocational guidance in a group with limited use of English than are ratings obtained with the verbal scales. These scales should be as useful with the Indians of Central and South America as they are with our North American Indian groups.

A high degree of success on Form I has served as a basis for recommendation for training in laboratory or shop work, the specific kind depending upon the interests of the individual. Conversely, poor success on Form I has often accompanied failure in laboratory and shop work in spite of satisfactory ratings on the verbal scales, including the Binet. The Stencil Design Test of the Revised Form II appears to be especially useful in selecting individuals likely to be successful in activities requiring logical and constructive thinking such as advanced mathematics, architectural drafting, etc.

For 974 individuals the P.E. between Form I and the Binet I.Q. was less than five points for all age groups except 12 years, 15, 16 and adult. At these higher levels, the upper Q values showed the same tendency as the medians to be appreciably higher on the Point Scale of Performance Tests than on the Binet. This was thought to be due to the low ceiling of the 1916 Stanford-Binet scale. For 25 subjects tested on Terman L and on Form I, the median Binet I.Q. was 143. The median chronological age was 19 years 7 months. In the correlation between the two sets of I.Q.s r = .73 ± .09. For 171 cases, the correlation between Form II and the Binet I.Q. was .78. (Uncorrected correlations between I.Q.s obtained with verbal and non-verbal scales tend to fall in the 70's. Those between mental ages tend to fall in the 80's.)

Patients with a reading disability described by Hinschelwood as

"Congenital Word Blindness" tend to earn a rating on Form I that agrees more closely with the Binet rating obtained after satisfactory reading skills have been developed than does the Binet rating obtained before they have learned to read.

In the search for a "Culture-free" scale, Cattell and his co-workers reported that of the tests investigated "the A.C.E. seems most susceptible to cultural influence, and the Arthur least." Later they built a scale that they felt was better than either of those named.

Materials for Form I and the original Form II are obtained from Stoelting Company, 424 North Homan Avenue, Chicago.

Materials for Revised Form II can be obtained from the Psychological Corporation, 522 Fifth Avenue, New York, New York.

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G. A.

Arthur Stencil Design Test I. This non-verbal test was devised to take the place of the Kohs Block Design Test in the Revised Form II of the Point Scale of Performance Tests. It consists of 20 design cards, each 3 inches square, and 18 colored cards, also 3 inches square, to be used to reproduce the designs. Six of the 18 cards are solid colors, and 12 are stencils.

The score is the number of designs correctly reproduced within the four minute time limit allowed for each design. However, the time required to complete each design is recorded, as later, additional points will be allowed for completion of a design in less than the four minutes maximum time allowed.

Chronological age norms have been based upon the responses of 968 pupils from the same middle class "American" district used in standardizing Form I of the Point Scale of Performance Tests, for age groups 4.5 to 15.5, inclusive.

Stencil Design Test I can be given successfully to deaf or non-English speaking individuals, without the use of words. It gives evidence of measuring thinking ability as contrasted with the sampling of learned material. Individuals who have earned outstandingly good scores on this test have shown ability in mathematics, architectural drafting, laboratory science and related fields.

Probably because of the spatial relations involved, this test has been useful in helping to identify cases of brain injury.

The Stencil Design Test I is published by the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

Stencil Design Test II, "Black and White." "Black and White" was constructed as an alternate to Stencil Design Test I, to make possible the reexamination of organic cases after operation. It consists of 20 design cards, and 24 cards of which 22 are stencils for copying the designs. As its name indicates, the designs are printed in black and white."

This test is more difficult than Stencil Design Test I. Adults as well as children, show little practice effect from Stencil Design Test I. They approach Black and White on a trial and error basis.

Those who earn high scores on this test are likely to show ability in art. Children who do exceptionally well on it are found frequently to mention art as the favorite subject in school.

Black and White is still in process of standardization. Norms are being established upon responses obtained from individuals who have been examined with Stencil Design I. Tentative norms are available at the present time.

It is published by the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

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G. A.

Barr-Taussig Scale for Measuring Mental Ability in Vocations. In order to evaluate the occupational level of the fathers of the one thousand gifted children studied by Terman, a classification more objective than Taussig's five-level one was required. F. E. Barr developed his scale to meet this need.

The Taussig scale, a prototype of most subsequent scales, is a classification of all occupations into groups which, in his opinion, are non-competing. The resulting five groups are: professional, semi-professional, and business, skilled, semi-skilled, and common laborer. Barr listed about 100 occupations which presumably represented the full range of the desired scale. These occupations were rated on the basis of the amount of intelligence they were believed to demand, by 30 judges. The pooled ratings were converted to P.E. units which in turn were transmuted so that the lowest scale value is zero and the highest 20.71. The range of P.E. values was then divided into five equal parts. The highest ranking occupations, with their scale values, for each of the five ranks are as follows: Rank I, inventive genius, 20.71; Rank II, mining engineer, 16.26; Rank III, librarian, 12.22; Rank IV, harness maker, 8.22; and Rank V, section hand, 3.60. Hobo has the rank of zero. These five ranks correspond closely to Taussig's five levels.

Proctor (5, p. 123) reports that Giles M. Ruch found a rank order correlation of .79 between Barr scales values and the median scores made by the different occupations on the Army mental tests

(1918). It is entirely possible that the ratings of Barr's judges were influenced by the prestige status of occupations, so that intelligence alone was not the basis for evaluation. No data on reliability are available.

Since its use in the Terman study, the Barr scale has been frequently used in studies of prediction of occupational level from intelligence level.

In addition to its presentation in Barr's thesis,[2] the full scale may be found in Terman [6] and the five-rank classification is illustrated in Proctor.[5] The scale is not published separately.

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S. S. M.

Bregman Revision of the Army Alpha Examinations for General Intelligence Forms A and B. These examinations arranged by Elsie O. Bregman, are combinations of the five forms of the original Alpha Examinations used for testing the intelligence of recruits in the Army of the United States during World War I, made to be of average difficulty and to give average scores. The best questions for general use have been selected from the five forms by order of merit method. Items addressed particularly to men recruits at a given time have been excluded, and military terms replaced by terms from ordinary civil life. Revision Forms A and B are otherwise identical with the original forms of Army Alpha. Data which are available for the interpretation of scores on the original forms may be used to interpret scores obtained with these Revisions. For such data consult the references listed below.

Revision A is basically Form 8 of the original Alpha, Revision B Form 9. Revision consists in the replacement of certain items in these forms, particularly items in subtests 3 and 8, with items drawn from the alternative forms of Alpha. This was done on the basis of the combined judgments of four competent judges, who were requested to rate the items from all five of the original forms on a scale of five, for their value and suitability as measures of general intelligence. An item was to be considered good if the correct response to it was judged to depend to a maximum on the native intelligence of an adult individual; it was to be considered poor in the degree to which a correct response was judged to depend on fortuitous factors, education, social position or class, occupation, country or locality of birth or residence, or whether or not the information asked for was likely to grow out of date. The tests as published in the Revisions A and B were assembled after analysis of the combined judgments, items judged poorest in Forms 8 and 9 having been replaced by similar items in the alternative forms which received higher combined ratings. Correlation with other forms of Alpha are of the order of .9.

The examinations are suitable for use with adults and with students at high school and college levels. They are published by the Psychological Corporation, 522 Fifth Avenue, New York, N. Y. The manuals give grade and age norms, and also a scale for converting scores into percentiles of the general adult population.

References:

1. Bregman, E. O. On converting scores on the Army Alpha Examination into percentiles of the total population. School and Society, 1926, 23, 695–696.
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E. O. B.

California Test of Mental Maturity. This group test of intelligence, constructed by Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs, has been so devised and standardized that researches have shown it to yield results which correlate closely with those obtained from individual Binets. It includes five series for different maturity levels, similarly standardized; directly comparable scores can therefore be obtained through the entire range of these series from pre-school children to superior adults.

The tests in each series yield not one, but *three mental ages* and *three intelligence quotients*: these include the composite MA and IQ characteristic of ordinary intelligence tests; a language MA and IQ; and a non-language MA and IQ. Differences between the language and non-language MA's and IQ's are immediately available for use in educational diagnosis and guidance; for example, these results reveal the relative influence of reading disability and lack of mental maturity in cases of educational difficulty or failure.

Perhaps the outstanding feature of each of these series is that their results, which in old-type intelligence tests served only as the basis for computing composite MA's and IQ's, are now broken down and presented in terms of *five factors* which are more useful in teaching and guiding learning than are composite MA's and IQ's. These factors include memory, spatial relationships, logical reasoning, numerical reasoning, and vocabulary or the verbal factor. Thus, in addition to the fact that the total MA and IQ closely approximate those of an individual Binet, the *California Test of Mental Maturity* gives separate diagnostic and guidance measures in the following abilities: language, non-language, memory, spatial, logical reasoning, numerical reasoning, and vocabulary.

Three pre-tests in Sensory Capacity—vision, hearing, and motor-coordination—reveal whether the pupil possesses disabilities in these respects which would prevent him from doing himself justice on whatever series he may be taking.

All of the above information is shown graphically on a *Diagnostic Profile* which constitutes the first page of each test booklet. This profile is so devised so that the teacher may obtain a complete knowledge of all of the above abilities and disabilities without the necessity of doing any arithmetic or other computations.

The number and nature of the test situations in this series yield a high *reliability*; coefficients for total mental factors for individual series range between .932 and .961. Reliabilities for individual factors on all series average above .85, many of them exceeding .90.

There are no purely objective criteria by which the validity of an intelligence or mental maturity test may be established. The various series have been correlated with the individual Binet and with other intelligence tests. The Binet has long been assumed to possess high validity; the various series of the California Test of Mental Maturity correlate higher with the individual Binet than with any other test.

The *California Test of Mental Maturity* is easily administered.

The manual provides simple instructions; any teacher who follows them can obtain valid results. Any test in the series may be given either as a group or as an individual test.

The *California Test of Mental Maturity* is published in several forms to suit the needs of various types of users, as follows:

1. *Test of Mental Maturity*—Pre-primary, Primary, Elementary, Intermediate, and Advanced series. These are the original two-period tests of which the other editions are modifications.

2. *Intelligence Test—Non-Language Section.* This is a reprint of the Non-Language tests of each series of the California Test of Mental Maturity and is also available as a machine-scoring edition in the Elementary, Intermediate, and Advanced Series.

3. *Intelligence Test—Language Section.* This is a reprint of Language tests of each series of the California Test of Mental Maturity, and is likewise available as a machine-scoring edition in the Elementary, Intermediate, and Advanced Series.

4. *Short-Form Test of Mental Maturity.* Pre-primary, Primary, Elementary, Intermediate, and Advanced S-Forms. These are a one-period edition, made up of three each of the Language and Non-Language Tests of the California Test of Mental Maturity.

5. *Capacity Questionnaire, Forms A and B,* is a 30-minute self-administering edition of the California Test of Mental Maturity providing both Language and Non-Language Test data for secondary school, colleges, and personnel selection.

The *California Test of Mental Maturity* was standardized on groups of 5,000 to 10,000 for each of the series. The mental ages thus established are in close agreement with those obtained by giving individual Binet tests. The mental age scale has been projected in such a manner that the individuals of adolescent and adult ages will obtain IQ's approximating in variation (sigma 16) those obtained in the lower age groups.

The publisher of all series and forms of this test is the California Test Bureau, 5916 Hollywood Blvd., Los Angeles 28, California.

E. W. T.

Carnegie Mental Ability Tests. The Carnegie Mental Ability Tests, constructed by Glen U. Cleeton, are published as a group examination suitable for use in all high school grades and in the four college years. The examination is most widely used as a mental ability or "intelligence" test for high school seniors at the time of graduation or after admission to college. The range of difficulty covered and the even calibration of test items provide an examination which not only encourages serious effort on the part of high school freshmen but also commands the respect of college seniors.

That level of mental ability is shown by the facility with which an individual is able to profit by both direct and indirect training is the theory underlying the test. It is assumed that the best prediction of what a person may be expected to do in the future can be made from evidence of what he can now do. Mental manipulation and achievement items are included in the examination; therefore, the tests can be used both as a measure of scholastic ability and as a measure of scholastic attainment.

The examination consists of eight separate tests, thus making it possible to utilize the scores of each test either separately, in combination with scores on other tests in the examination, or as a total examination score. Tests 1 to 3, "Word Relations Tests," include disarranged sentences, opposites, antonyms, and synonyms (120 items). Tests 4 to 6, "Number Relations Tests," include number series, calculation, and mathematical reasoning (105 items). Tests 7 and 8, are "High School Information" (100 items).

In experiments which led to construction of the examination, a large number of tests containing several types of items were administered to high school graduates and college freshmen. Each item was checked against scholarship records, and test items which showed predictive significance in separating students into four arbitrarily determined scholarship categories were chosen for inclusion in the examination. Through further experiments, it was demonstrated that a combination of *mental processes* and *mental product* types of test items will predict scholastic ability more accurately than either type of test item when used separately.

Test results may be used for educational guidance, educational classification, and vocational guidance. Tables are supplied, indicating the probability of successful completion of educational undertakings in colleges of low, average, and high admission standards. Tables of percentile norms for all grades in high school and for college freshmen are provided in the *Manual of Directions*. Norm tables are subdivided to show scores for (a) the entire examination, (b) the "Word Relations" section, (c) the "Number Relations" section, and (d) the "High School Information" section.

Based on comparison of test results with scholastic records, correlations of validity, ranging from .50 to .70, have been obtained. Prediction ratios have been established showing the probability of a student with a given score attaining average scholarship standing. It is possible, through application of these ratios, to reveal to a high school senior or college freshman the probability of his success or failure in college work.

Reliability coefficients determined by correlating odd with even items are: (a) .954 for the total examination, (b) .926 for the combined scores of tests 1, 2, and 3, (c) .888 for the combined scores of tests 4, 5, and 6, (d) .904 for the combined scores of tests 7 and 8.

The examination is planned for use with the Clapp-Young Self-Marking Answer Booklet. The student marks answers in the appropriate spaces on a sealed answer booklet. If answers are correct, they are registered on the reverse side of the sheet in keyed squares; if incorrect, outside the keyed squares. The test may then be scored by breaking the seal on the answer booklet and totaling the number of marks appearing inside the squares on the reverse side of the answer sheet.

The test booklets and Self-Marking Answer Booklets may be obtained from the publisher, Houghton-Mifflin Company, Cambridge, Massachusetts.

References:

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2. ———. Meeting the need for improved measures to be used in the college guidance program. *Educational Administration and Supervision* XI, No. 7, Oct., 1925.
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4. ———. The predictive value of certain measures of ability in college freshmen. *Journal of Educational Research* XV, No. 5, May, 1927.

G. U. C.

Chicago Tests of Primary Mental Abilities. Constructed by L. L. and Thelma Gwinn Thurstone, the University of Chicago, this battery of eleven tests measures six basic factors of intelligence. Research on the primary mental abilities has been in progress for several years, identifying and defining the independent factors of mind, and preparing a set of tests of psychological significance and practicable adaptability to the school testing and guidance program.

Until recent years, the prevailing practice when speaking of an individual's general mental endowment has been to refer to it in terms of a single index such as the mental age or intelligence quotient. Many educators now feel, however, that this method is inadequate for meeting present-day educational problems since it arranges all individuals on a single scale from the highest to lowest without differentiating the kinds and degrees of ability.

The six primary mental abilities that are presented in this test battery are: Number, Verbal Meaning, Space, Word Fluency, Reasoning, and Memory. Several other intellectual functions have been indicated in recent studies and will be added to the batteries for practical use as soon as their nature and significance are clearly established. Number ability involves the ability to make accurate, rapid, calculations, and is not dependent upon the reasoning factor in problem-solving; Verbal ability, necessary to the understanding of reading material, is indicated by vocabulary, comprehension of opposites and synonyms, and completion items; Space perception is a feature of any task in which the subject manipulates an object mentally in space; Memory ability involves rapid memorization and immediate recall; Word Fluency ability involves the ability to think of isolated words at a rapid rate; and Reasoning ability is measured by tasks requiring the discovery of a rule or principle involved in a series.

The total time required for administering the tests is about two hours. It is recommended that the testing be done in two periods of one hour each or in three periods of forty minutes each. The results are shown in terms of a profile of percentile ranks and a profile of age scores. The norms are based on 18,000 students in the Chicago Public Schools. The tests were given to approximately 1,000 pupils in each half-year interval from age ten to age eighteen, and from these data were prepared the tables of percentile ranks and age equivalents.

The reliabilities of the six composites in this test battery have been computed by the split-half method, using the Spearman-Brown correction for double length, for grade levels six, eight, ten, and twelve. Higher coefficients would be obtained if the calculations were made for a range of ability greater than found in one year. The reliabilities are: .97, Number; .96, Verbal Meaning; .97, Space; .96, Reasoning; and .73, Memory. Intercorrelations range from .13 to .59.

Studies are now in progress comparing the profiles of high school students who elect different curricula and who succeed or fail in different high school subjects. One such investigation has been made with university students who major in different academic subjects and professions.

The publisher of the Chicago Tests of Primary Mental Abilities (for ages 11–17), which are contained in a single test booklet, is Science Research Associates, 228 South Wabash Avenue, Chicago 4, Illinois.

References:

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3. Thurstone, T. G. *Primary mental abilities of children.* Educational and Psychological Measurement, 1941, 1, 105–116.

B. J. M.

Chicago Non-Verbal Examination. The Chicago Non-Verbal Examination constructed by Andrew W. Brown, with the assistance of Seymour P. Stein and Perry L. Rohrer, in 1936 intends to measure general intelligence without the use of written verbal symbols. It is, therefore, designed for use with the deaf, with those who have a limited facility with the English language, with the foreign speaking, with those who are illiterate, who have reading difficulties or who for some reason have difficulty understanding and manipulating verbal concepts. It may be used as a group screening test, and as a rough measure of general intelligence for the exceptional individual.

The test consists entirely of pictures, geometric forms, digit symbols and designs, arranged in ten sub-tests: (1) common digit symbols: (2) marking out what does not belong in a series of pictures or designs; (3) block counting; (4) selecting from a series of geometrical forms two which can be put together to make a given form; (5) selecting from a series of designs one of which is like a given design; (6) arranging parts of a picture to make a complete picture; (7) numbering pictures according to certain sequence; (8) marking the thing that is wrong in each of a number of pictures; (9) selecting from a series of pictures the one that goes with or is a part of a given picture; (10) learning of a more difficult type than test 1.

These tests make demands upon perceptual and conceptual abilities, associative processes, the ability to grasp the significance of a social situation, social judgment, reasoning, organization and orderly thinking, speed and accuracy, and visualization.

Directions for administration may be given either orally or in pantomime. Verbal instructions may be used from age 6 through adult, pantomime is not usable below age 7. The test may be administered as either a group or individual test. Actual testing time is 25 minutes, each test being timed separately, time limits ranging from 1½ minutes to 5 minutes. The drawings on some of the tests are poorly done and in many cases ambiguous. The individual without good visual acuity is penalized.

The test was standardized for both verbal and pantomime instructions. The norms of the test with verbal instructions were found to be a little higher than those of the test using pantomime instructions. Over 6,000 cases from ages 6 through adult were used in the standardization. Norms are available in the form of mental ages, centile rank and modified standard scores for each age up to 14 years. For those older than 14 years only percentile ranks and modified standard scores are available. The modified standard scores have been derived by equating them with obtained standard scores. Mental ages between six and fifteen are true mental ages. These norms were established on normal, hearing childrren of the middle economic class in Chicago, 70% of whom were native white and 30% foreign born.

The test has been validated against four criteria: (1) correlation with chronological age; (2) comparison of the normal scores with those obtained on the feeble minded; (3) distribution of scores as compared with the normal curve; (4) correspondence between results of this test and other tests, both verbal and non-verbal, which purport to measure intelligence. These criteria have been satisfied in the following manner: (1) correlation between total score and chronological age using the verbal directions was found to be .75, using pantomime directions was .81. (2) comparison of scores on Stanford Binet and Chicago Non-verbal given to 134 mentally retarded children yielded an average difference of only one point. (3) The distribution of scores for both the verbal and pantomime for ages 7–14 inclusive seem to approach the normal. (4) The correlation between the Non-Verbal I.Q. and the Otis Self Administering Intermediate I.Q. for 127 cases, ages 8 through 15, was .67, and between the Non-Verbal and Kuhlmann Anderson for grades 4, 5, and 6, 100 cases, .57.

Reliability was investigated for both the verbal and pantomime instructions. Correlation between odd and even tests for a group of 334 children ages 8 to 13 when corrected by the Spearman Brown formula was found to be .89, using the test-retest method for 71 cases, grades 4B and 5A, reliability was .80. Reliability of the test when given with pantomime directions to children ages 7 to 14 and corrected by the Spearman Brown formula was found to range from .91 to .93.

The test may be obtained from the Psychological Corporation, 522 Fifth Avenue, New York.

Reference:

1. Brown, A. W. The development and standardization of the Chicago Non-Verbal Examination. *Journal of Applied Psychology*, 1940, 24, 36–47, 122–9.

E. C. J.

Cornell-Coxe Performance Ability Scale. The scale was standardized by Warren W. Coxe and Ethel L. Cornell. It consists of 6 tests given as a battery. The tests are adaptations of tests from the Army Performance Scale of World War I, the Kohs Block Designs, and a new Picture Arrangement test of graded difficulty. In the standardization, provision was made for using the Healy Picture Completion as an alternative for the Picture Arrangement.

Criteria used in selection of the tests were: (1) the tests should involve as many different kinds of content as possible to avoid overemphasis on manipulative skill, speed or form perception; (2) each test should be capable of demonstration by non-verbal methods and should provide experience with a sample as a corrective check on understanding of directions; (3) each test should measure a wide range of specific ability; (4) cumbersome material should be avoided in the interests of travelling clinics. Correlation of the battery of tests with chronological age (range of ages 5–16) was $r = .78$ and with Stanford-Binet mental age, $r = .79$. Correlation of two administrations of the test eleven months apart was $r = .93$, which indicates about the same order of reliability as for Binet tests.

The tests are scored for accuracy of performance within a time limit, plus a bonus for completion in less than the time-limit. Weighted scores were derived by a modified T-scaling technique. Age-norms were determined from a smoothed curve representing the average of the two regression lines for age-on-score and score-on-age. The scale is applicable over a mental age range from about 5 to 16.

Studies by the authors indicate that the Performance Scale is particularly useful in estimating the mental efficiency of individuals who are "non-verbal" or who have a marked handicap in speaking English, and in discovering differences among individuals in the direction of interests and the extent of emotional drive. Other studies indicate that the mentally subnormal tend to test higher on the Performance Scale (as well as on performance tests generally) than on the Binet, that among superior children the socially mature test relatively higher on Performance than the socially immature. Cues as to methods of attacking problems are observable by the examiner and are helpful for individual guidance.

The examination manual describes the standardization of the test, discusses the functions of performance tests, gives some interpretive studies, and contains detailed directions for giving and scoring the tests. The Manual and the individual record booklets are published by the World Book Co., Yonkers-on-Hudson, N. Y. The test materials are made by Ellen Wilson, 1013 North Madison St., Rome, N. Y., and may be ordered directly from the maker or through the Psychological Corporation.

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1. Brill, M. Performance tests as aids in the diagnosis of maladjustment. *Jour. Genet. Psych.*, 1936, 49, 199–214.
2. Cornell, E. L. and Coxe, W. W. *Cornell-Coxe Performance Ability Scale*. Yonkers-on-Hudson, New York: World Book Co., 1934.
3. Lincoln, H. A study of the Cornell-Coxe Performance Ability Scale with superior children. *Jour. Genet. Psych.*, 1937, 50, 283–92.

E. L. C.

Haggerty Intelligence Examination. The Haggerty Intelligence Examination consists of two group intelligence tests which were arranged and standardized by M. E. Haggerty, late of the University of Minnesota. Delta 1 comprises five non-verbal tests and one verbal test and is designed for grades 1 to 3. Delta 2 comprises six tests and is designed for grades 3 to 9. The Delta 2 examination is an adaptation of the army intelligence examinations.

Both tests are easy to administer and to score, and may be administered within 30 minutes. Age and grade norms are provided. The reliability and validity of both tests have been proved in wide use.

The publisher of this examination is World Book Company, Yonkers-on-Hudson, New York.

B. C. W.

Kellogg-Morton Revised Beta Examination. This test is a revision of the original Army Beta Intelligence Examination and was devised by D. E. Kellogg, and N. W. Morton. It substitutes printed exercises preceding each of the six tests instead of the pantomime method of giving directions which was used in the original form. The test is designed to be used with illiterate or non-English speaking individuals grade three to adult. A French edition for use with French-Canadians is also available.

The content of the test was modified somewhat from the original Army tests where experience showed unsatisfactory distributions. In re-standardization, the test was administered to 202 unemployed Canadian men and 92 university students. It was found that the distributions assumed approximately the normal range. The sub-test intercorrelations range from .44 to .79. The tetrad differences satisfies Spearman's standard for "g".

Reliability was .987 on odd-even items using the Spearman-Brown formula and .899 on odd-even tests. Re-testing a group of 60 sixth grade Canadian children yielded a correlation of .770.

Relationship with other intelligence tests was found. The Revised Beta correlated .728 ± .024 with the Psychological Corporation Revision of the Army Alpha, .707 ± .018 with the Otis Self-Administering Test of Mental Ability (Higher Examination, Form A), .875 ± .014 with the Revised Beta Form Board, and .553 ± .040 with the New Stanford Achievement Test (Advanced Form V).

American norms were set up by Miss Clara Carroll in two studies involving 885 school children of the New York City Schools.[2] The Revised Beta Examination correlated .78 ± .02 with Stanford Binet (1916) mental ages on 521 cases and .71 ± .02 for 364 subjects with the Otis Self-Administering Test of Mental Ability (Higher Examination, Form A). From this information the Beta scores were assigned for Stanford Binet Mental Age equivalents and Otis Test Score equivalents.

The directions for administration are simple and fully explained in the manual.[2] Time for administration is thirty minutes.

The test can be used where a general estimate of intelligence level is desired in an illiterate or non-English speaking subject. It may also be used as an additional check on other tests of intelligence where there is an indication of borderline performance. Results on the French edition should be used with clinical caution until supplementary norms are reported.

The test is published by the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

References:

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W. F. M.

Kent-Shakow Formboard Series (Clinical and Industrial). The Kent-Shakow revision of their original Worcester Formboard Series[10] is available in two forms, known as the Clinical and Industrial models.[8] These differ only in size and in the arrangement of the depressions. The boards have five recesses, for each of which is provided eight complete sets of blocks a little thicker than the depth of the recess. All the recesses are quadrilaterally symmetrical. The sets of blocks furnish eight different tasks of increasing difficulty each involving one problem repeated five times.

The Clinical Series is intended for use in settings where portability is an important consideration; the Industrial Series is preferable in settings where considerations of compactness are not important. Otherwise, each Series is intended to meet the needs which a formboard series having wide discriminative range, which reduces the factor of chance in placements to a minimum, and which places a high premium on planning as opposed to trial and error performance, can supply.

The directions are supplied with the material and are described in detail in several publications listed in the bibliography.[4,11,12]

The Clinical Series has been standardized for adults. Decile norms are available[11] based on 91 adult males, aged 16–40 and on 120 adult females in the same age range. Additional norms are available on two groups of "superior" subjects: 64 males, ranging in age from 25–45 and 80 females ranging in age from 16–55. A tentative age level scoring system based on a relatively small number of cases of children ranging in age from 5–16 is also available for this Series but is unpublished. The Industrial Series has been standardized by Teegarden[12,13] on 600 males and 350 female subjects ranging in age from 16–25, from which percentile sex norms are derived. A further standardization[4] based on a somewhat modified technique of administration employed at the Brush Foundation, in which two groups of children aged 5–11 and 9–13 years respectively were used, provides decile and standard scores for ages 5–11. Grove[5] has published point score norms based on percentiles derived from a group of 200 adult delinquents. In another study[6,7] he provides norms for a modified form of the test, based on another group of 304 delinquent adult male subjects. It should be emphasized, however, that the qualitative aspects of capacity and affective reaction which may be observed during the performance are usually at least as valuable as the quantitative, and frequently more so.

Although few studies directed at determining the validity of the test have been made, the Series has been applied in a variety of settings. Brill,[1 2 3] using the lower part of the Clinical Series, in a comparative study of the performance of adjusted and maladjusted mentally deficient boys, found performance on the K–S set 2–S to possess considerable differentiating power between the groups. Teegarden [12 13 14] has found the Industrial Series helpful in testing young adults for manipulative and mechanical abilities in a public employment office. Newman [9] has used the Industrial Series for the prediction of shopwork performance in an adult rehabilitation program. He obtained a correlation coefficient of .76 between shop ratings in accuracy, speed, and constructive thinking and time scores on the Series. Both series of boards have had considerable use in psychiatric institutions for work with psychotic and brain-injured cases, and in child guidance clinics with behavior and personality problems.

Few data are available on reliability. In the Brush Foundation study,[4] in which intervals of one to four years intervened before retesting, correlations of between .62 and .80 were obtained.

Several of the references given below provide correlation data on both the Industrial and Clinical models with a variety of other psychometric devices. With the Stanford-Binet Ebert reports correlations which run from .43 to .50, and Grove a correlation of .43. Ebert reports correlations which run from .28 to .59 for various ages with the Merrill-Palmer. Some of the correlations which have been found with other performance tests are the following: Kent-Kohs, .58 to .69;[4] Block Designs, .62;[5] Minnesota Paper Formboard, .62 to .74;[4] Cube Construction, .65;[5] Porteus Mazes, .44;[5] Minnesota Spatial Relations, .48 to .56.[13] Brill [3] also provides considerable correlation data. The original studies should be consulted for further details.

Both the Clinical and Industrial Series are manufactured by the C. H. Stoelting Company and by Mr. Sven G. Nilsson, 16 Maverick Road, Worcester 5, Mass. The latter's price for the Clinical Series is $55 and for the Industrial Series is $60. Inquiries should be made of the Stoelting Company as to their latest prices.

References:

1. Brill, M. Psychometric data as indices of instability. Proc. & Add. Amer. Assoc. Ment. Defic., 1935, 40, 421–434.
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3. ———. Performance tests as aids in the diagnosis of maladjustment. J. Genet. Psychol., 1936, 49, 199–244.

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8. Kent, G. H. and Shakow, D. Graded series of formboards. Personn. J., 1928, 7, 115–120.
9. Newman, J. The prediction of shopwork performance in an adult rehabilitation program: The Kent-Shakow Industrial Formboard Series. Psychol. Rec., 1945, 5, 343–352.
10. Shakow, D. and Kent, G. H. The Worcester Formboard Series. J. Gen. Psychol., 1925, 32, 599–611.
11. Shakow, D. and Pazeian, B. Adult norms for the K-S Clinical Formboards. J. App. Psychol., 1939, 23, 495–502.
12. Teegarden, L. Manipulative performance of young adult applicants at a public employment office—Part I. J. Appl. Psychol., 1942, 26, 633–652.
13. ———. Manipulative performance of young adult applicants at a public employment office—Part II. J. Appl. Psychol., 1942, 26, 754–769.
14. ———. Occupational differences in manipulative performance of applicants at a public employment office. J. Appl. Psychol., 1943, 27, 416–437.

D. S.

Kohs Block-Design Test. This test, constructed by Samuel C. Kohs, was devised in order to measure intelligence through manual manipulation and motor performance rather than through customary verbal, conversational procedure. In its original conception it was not intended to replace standardized verbal tests of intelligence, but to serve as a supplementation, and where verbal tests were impossible.

The test was incorporated in other series of tests devised by Grace Helen Kent, David Wechsler and others. The tests have been utilized for determining the intelligence of primitive people, aborigines, and other groups isolated from modern civilization. This includes the work of Porteus in the interior of Australia, and of Robleda for the Mexican-Indians of the Janizio and Paracho sections of Mexico.

During the present war, British and American psychologists and psychiatrists have found the tests of value in the analysis and interpretation of mental disturbances. Here especially the suggestions made in the original standardization of the test are borne out, namely that the qualitative reactions may be as valuable and as significant as the quantitative ones.

The tests were standardized on the children of various age levels. Age norms were established on the average achievement for different age groups.

The directions for administration and the discussion of standardization procedure, the determination of validity and reliability are discussed by the author in his book: *Intelligence Measurement.*

The Block-Design Test materials and the book, *Intelligence Measurement,* may be secured from: C. H. Stoelting Co., 424 North Homan Avenue, Chicago 24, Ill.

References:

1. Arbusov, V. N. (The block design test of Kohs) Swetsk. Psikhotekh., 1937, 7, No. 1, 48–60.
2. Benton, A. L. Study of the performance of young adults in the Kohs black designs test. J. Appl. Psychol., 1941, 25, 420–7.
3. Bradford, E. J. G. Performance tests in the diagnosis of mental deficiency. Brit. J. Med. Psychol., 1943, 19, 394–414.
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7. Kohs, S. C. *Intelligence measurement.* New York: Macmillan, 1919.
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S. C. K.

Kuhlmann-Anderson Intelligence Tests. The Kuhlmann-Anderson Tests of Intelligence were developed by the Research Bureau of the Minnesota State Board of Control of which Fred Kuhlmann was the director and Rose G. Anderson a member of the research staff. Other staff members have participated, notably Charlotte Lowe. The thirty-five tests comprising the first edition of the test (1927) were survivals of over a hundred tried out during the ten-year experimental period.

The preface to the First Edition emphasized the following distinctive features of the tests: (1) each test is fitted to an age period and is used only where it fits best; (2) giving the average age of children who pass one trial and no more, two trials and no more, and so on for each test shows its exact range of applicability, and its capacity to discriminate between different levels of mental development; (3) zero or maximum scores are largely prevented by having a different battery of tests for each age. The undue influence of such scores is almost entirely eliminated by the median mental age method of scoring; (4) the child sees only one test at a time, thus eliminating distractions; (5) the median mental age method of scoring makes possible the use of the tests in abbreviated form, also the substitution or addition of other tests similarly standardized; (6) the mental age score on each test in the battery shows accurately on what particular tasks a child scores above or below his median mental age.

The test has gone through five editions with revised norms (1942) for the Fifth Edition. The present scale is comprised of nine overlapping batteries of ten tests each. The first booklet is adapted to beginning first graders, the highest booklet measures superior adult levels. Both verbal and non-verbal content is included. The tests are adapted equally well for group and individual testing.

Standardization: Over 30,000 elementary and high school children were examined with the tests before publication. The 1942 norms were based upon 5,096 cases from two New Jersey and three Pennsylvania representative school populations. The norms were checked at all stages by several thousand cases from Minnesota, Pennsylvania, Maryland, and other areas.

Validity: The tests measure mental development from the age of five to mental maturity. The *discriminative capacity* or the ability to make fine discriminations between small increments of mental development is the criterion of validity. All tests have first met specific requirements: (1) critical original selection, (2) avoidance of tests dependent on special training, (3) placing tests dependent on general training in ages where children have had adequate opportunity for such training, (4) retention of those which discriminate best between unselected successive age-groups, (5) further detailed analysis of test results to substantiate the indication that the tests measure something beyond general training, i.e., that they measure the capacity to acquire it.

Reliability: Factors affecting reliability have been carefully controlled. The difficulty of the tests at each age has been adjusted to the mental development found there. The different batteries represent the same degree of difficulty at the respective ages at which they are used. Conditions under which children take the tests have been kept as uniform as possible by giving preliminary practice examples for each test, and by giving complete directions for each test.

Mental age tables to facilitate the computation of the median mental age are provided on the test booklet, also a profile graph. Alternative Heinis Mental growth units are provided for the entire mental growth span.

Publisher: Educational Test Bureau, Minneapolis, 14, Minnesota.

References:

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2. ———. The Fifth Revision of the Kuhlmann-Anderson Tests. Journal of Applied Psychology, April, 1940.
3. Kuhlmann, F. A. Median mental age method of weighting and scaling mental tests. Journal of Applied Psychology, June, 1927.
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R. G. A.

Miller Mental Ability Test. This test, constructed by W. S. Miller, was designed to measure scholastic aptitude in grades 7 to 12 and in the freshman year in college. It contains 3 tests which can be given to large groups in 30 minutes including time for filling the heading and for reading directions.

Test I of the battery is a combination of a disarranged-sentence test and a directions test. Test II is a controlled association test which includes 200 words ranging in difficulty from words in the vocabulary of the poorest seventh grade pupil to words seldom found in the vocabulary of the best high-school senior. Test III is a modification of the mixed relations or analogies test so frequently found in group tests of mental ability.

Two forms of the test are available. If only one form of the test is given, Form A should be used. If both forms are used, Form A should precede Form B.

SOME CORRELATIONS BETWEEN THE MILLER MENTAL ABILITY TEST, OTHER INTELLIGENCE TESTS, AND SCHOLASTIC ACHIEVEMENT OF 57 HIGH SCHOOL FRESHMEN

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Miller Mental Ability Test																
1. Form A	90	97	87	89	86	82	75	82	74	70	92	89*	66	50	39	59
2. Form B		97	91	94	87	83	77	85	78	76	95	92	63	48	37	60
3. Average Forms A & B			92	92	90	85	77	90	78	74	96	89	66	51	40	61
4. Terman Group Test of Mental Ability, B				90	86	83	79	89	77	74	98	93	57	54	40	61
5. Army Alpha, Form 8					83	90	77	89	77	77	95	94	59	48	35	56
6. Otis S.-A., Higher Form A						82	76	84	80	76	92	90	67	54	57	69
7. Illinois General Intelligence Scale 1							76	85	75	77	92	89	60	39	34	53
8. Haggerty Delta 2								82	70	70	84	83	49	53	39	56
9. Pressey Senior Classification Test									75	80	94	92	58	62	44	62
10. Dearborn Group Test of Intelligence IIC										70	85	82	43	50	37	49
11. Stanford-Binet, 1916 Edition											85	84	50	47	45	56
12. Average of 10 Tests													63	56	45	64
13. Average of all other tests																
High School Marks Freshman Year																
14. English														34	57	78
15. General Science															59	72
16. Algebra																84
17. Average Marks in 4 subjects																

* Both Form A and Form B of Miller Mental Ability Test are excluded from this average.

The test is easy to administer and to score. Age and grade norms, also centile scores for each grade, and for each age within each grade are provided in the *Manual of Directions*. Mental age *in months* for any score may be had by doubling the score and adding 80.

DATA ON RELIABILITY OF MILLER MENTAL ABILITY TEST
FORMS A AND B

(a) Reliability coefficients r	(b) Numbers used in obtaining (a)	(c) Age or grade range involved in obtaining (a)	(d) Sigmas of distribution of scores used in (a)	(e) The "r" in (a) was obtained: e.g., Form A vs. Form B	(f) Interval between tests
.91	109	H.S. sophomore scores Md. C.A. 16–3 S.D. of C.A. 12.4 mo.	1. 14.2 2. 14.3	Form A vs. Form A	24 hours
.86	198	U. of Minnesota Freshmen Scores	A. 16.1 B. 14	Form A vs. Form B	24 hours
.90	57	I.Q.'s of 57 H.S. Freshmen Md. C.A. 13–7 S. D. of C.A. 10 Mo.	I.Q. A. 22.9 B. 18.9	Form A vs. Form B	10 months

PERCENTAGE DISTRIBUTION OF 2,901 COLLEGE FRESHMEN MARKS IN ACADEMIC SUBJECTS

COLLEGE MARKS

Miller Test A	F	Dr.	I	E	D	C	B	A
Highest ¼ ……	5.9	1.1	2.0	2.8	16.0	36.1	24.4	11.6
Second ¼ ……	11.1	2.2	0.4	5.7	22.5	38.5	15.8	3.7
Third ¼ ……	16.5	3.4	1.3	6.6	24.0	35.5	10.8	2.0
Lowest ¼ ……	21.4	7.3	1.9	8.5	26.2	29.0	5.0	0.7
TOTAL ……	14.0	3.0	1.0	6.5	22.0	35.0	14.0	4.5

Publisher: World Book Company, Yonkers 5, New York.

References:

1. Jordan, A. M. The validation of intelligence tests. *Journal of Educational Psychology,* 1922, 14, 348–366, 414–428.

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W. S. M.

Moss-Omwake Social Intelligence Test. This test, constructed by Fred A. Moss and K. T. Omwake purports to measure social intelligence as distinguished from mechanical or abstract intelligence. Social intelligence is defined as the ability to deal with people.

It is suggested by the authors that a measure of social intelligence would be useful in determining which individuals would be able to successfully manage the human relationships to be met in the vocational world. Norms are given for ten occupational classifications and it is recommended that only those individuals who at least meet the median of each group be encouraged to enter that field.

There are five parts to this test. The subject is required to (1) choose one of four possible courses of action in thirty briefly described social situations, (2) match an emotional term to eighteen quotations, (3) mark true or false, fifty statements about human behavior, (4) memorize the names and faces of 12 men and subsequently identify them from a series of 25 faces, (5) choose the best of 4 possible completions in a series of 20 jokes. The administration of the test is quite simple. The subjects are given 4 minutes to memorize the 12 names and faces. Then the remainder of the test is self-administered, with a time limit of forty-five minutes.

The reliability of the test is reported[2] as being 0.88 by the Spearman-Brown formula. The same study reports a correlation of .89 when 100 college sophomores took the test twice, four months apart, administered by different persons.

As reported by Hunt[5] validity was established in a number of different ways. The ratings by a superior executive of 98 employees of a sales firm of their ability to deal with people gave a correlation of .61 with the Social Intelligence Test scores. The ratings of a student's ability to deal with others both by students and teachers and test scores gave a correlation of .40. It was also reported that students who participated in many extra-curricular activities scored higher on this test than those engaging in few or none. Teachers, executives and salesmen, who presumably knew how to deal with people, attain higher scores than clerks or laborers.

This test has been subjected to considerable critical study. It has been found that neither ratings of college students in social attributes [1] nor their amount of social activity [4] bears any significant relationship to social intelligence test scores.

All the investigators report a fairly high (median .57) correlation between scores on the Social Intelligence Test and tests of general intelligence. After a detailed and thorough study Thorndike and Stein [6] conclude that the "Social Intelligence Test is so heavily loaded with ability to work with words and ideas that differences in social intelligence tend to be swamped by differences in abstract intelligence. There is no conclusive evidence, when these differences in abstract intelligence are allowed for, that the test has any validity as a measure of social intelligence."

On the other hand, Hunt [3] after examining almost identical data feels that although the test does measure abstract intelligence to a degree, at the same time it measures something sufficiently different from abstract intelligence so as to be of some value in the study of abilities.

The publisher of this test is the Center for Psychological Service, George Washington University, Washington, D. C.

References:

1. Burks, F. W. The relation of social intelligence test scores to ratings of social traits. Journal of Social Psychology, 8, 1937, 146–53.
2. Hunt, T. *The measurement of social intelligence.* Journal of Applied Psychology, 1928, 12, 317–37.
3. ———. *Measurement in psychology.* pp. 335–51. New York: Prentiss-Hall, Inc., 1936.
4. McClatchy, V. R. A theoretical and statistical critique of the concept of social intelligence and attempts to measure such a process. J. Abnormal and Social Psychology, 1929, 24, 217–20.
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National Intelligence Tests. The National Intelligence-Tests were prepared under the auspices of the National Research Council by M. E. Haggerty, L. M. Terman, E. L. Thorndike, G. M. Whipple, and R. M. Yerkes. These tests are planned for use in grades 3 to 8.

There are two tests, designated Scale A and Scale B. Either of these tests may be used alone to serve as a convenient method for the rapid survey of a school system but it is recommended that both scales be given for a more complete test. Each scale takes approximately 30 minutes to administer. For each scale there are three equivalent forms: 1, 2, and 3. Age and grade norms, based upon wide use of the tests, are provided.

The publisher of these tests is World Book Company, Yonkers-on-Hudson, New York.

B. C. W.

Ohio State University Psychological Test. This test, prepared by Herbert A. Toops and assistants at Ohio State University, has been under continuous research since 1919. This makes it both the oldest and also one of the most carefully constructed of group intelligence tests [2] for predicting probable college success and for guidance purposes at the high school and college level.

Centile ranks are obtained for both the total score and the reading comprehension subtest. These yield insight into some cases of academic failure.

In general a new form is constructed in alternate years, as follows: (1) Some forty items of highest validity chosen from the most recently published form are included in the new form. This insures high validity. (2) Several hundred new items are administered in the free association form to students of cooperating colleges. These are examined by aid of the item alternative coefficient [1] to insure that only items with statistically good alternatives are selected for a second trial in multiple choice form. The confusion alternatives are those which in the recall form both are given most frequently by poor scholars and most rarely by good ones. They thus have "logical appeal" to examinees.

This reduces the survivors to some two or three hundred items at most. Items below .20 in validity are at once discarded.

(3) The confusion alternatives are carefully scanned. Right answers should of course have *positive* validity coefficients; while confusion alternatives and "omissions" should have *negative* item alternative validity coefficients. Items otherwise good, but which have out-of-line confusion alternatives now have the offending alternatives altered to others of probable negative validity. Confusion alternatives of positive validity do more harm than good while even those of negative validity bordering on zero are suspect. The best 110 items finally are statistically chosen to add to the nucleus of 40 above mentioned, thus making 150 items in all. As a result the test

finally published has a validity of .55 to .65 in the prediction of college first year success; and a reliability of about .94.

The mechanical form of the test has gone through much evolution over the years. The test currently employs a stylus method of recording the answers which: (1) provides three identical copies of the examinee's response, for research or for filing in three separate school or guidance offices; (2) makes the test self-scoring, since the scorer does not have to mark the wrong items; [the minute the examinee's stylus pierces the replaceable answer pad that item is scored three times, automatically, within]; (3) and, provides a record which is especially easy to punch into I B M cards for research purposes, for determining, for example, on a thousand or more cases the highest item alternative validity coefficients for selection of the forty best items of this form, for a nucleus in turn of the ensuing form. The back cover of the test is an envelope (patented) into which the replaceable answer pad slips and serves to hold the question in alignment with the corresponding five answer voting squares on the answer pad. To get the test ready for a new administration one simply replaces the used answer pad with a new one. A given booklet thus is used over and over again with consequent saving. IBM scoring sheets also are available for forms 21 and 22.

Since the test is of the work-limit form, it is particularly adapted to the occasional and irregular testing of individuals in guidance programs, for testing examinees who arrive late or at other than the scheduled times. Those sick, for example, upon return to school, may be given the test and a quiet corner to work whereupon without further direction or attention on the part of the examiner they show up some two hours later with the completed test. The test is practically self-administering.

The work-limit method of administration was chosen because of (1) its statistically proven better validity over the time-limit method (2) its ability to meet the objections of teachers and examinees that there are some people who are slow but nevertheless accurate; and (3) because of its greater administrative conveniences enumerated.

Norms for high school students, all four classes, and for college freshmen are available. These are based on some thousands of students of each class in Ohio high schools and colleges. The test is employed in five state high school intelligence testing programs and in many U. S. colleges outside Ohio; but these cases are not included in the norms, which, to be most accurate and meaningful, it is believed, should represent some relatively homogeneous group of people. A 26-centile Ohio college standard is required for entrance to teacher training institutions of Ohio. The test has also been widely used in nurse-training institutions as an entrance test.

Time required; about 2 hours; no time limit. For grades nine to Ph. D. inclusive.

As a service to test users there have been issued some 132 Ohio College Association Bulletins and 27 Ohio High School Bulletins; both mimeographed. The current numbers of these bulletins are supplied gratis to users; back numbers, 10 cents each.

The test is published by the Committee on Technical Research of the Ohio College Association, Ohio State University, Columbus, Ohio.

A sample test is sent gratis to qualified school and guidance personnel. Price 10 cents per copy including one answer pad; special quantity prices to state secondary school testing programs which may either rent or purchase the booklets. Directions and norms gratis. Extra answer pads, six cents each.

H. A. T.

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5. ———. Cumulative List of the Ohio College Association Bulletins, by Authors, to June 15, 1940. *O.C.A. Bulletin,* No. 123, pp. 2411–2417.

L. S. R.

Otis Intelligence Tests

The Titles

The "Otis Intelligence Tests" consist of these following tests:

Otis Group Intelligence Scale

Primary Examination, for grades 1 to 4

Advanced Examination, for grades 5 to 12 and college students (all literate adults)

Otis Self-Administering Tests of Mental Ability

- Intermediate Examination, for grades 4 to 9
- Higher Examination, for grades 9 to 13

Otis Quick-Scoring Mental Ability Tests

- Alpha Test, for grades 1 to 4
- Beta Test, for grades 4 to 9
- Gamma Test, for high schools and colleges

Otis Employment Tests

- Test 1, for applicants of grammar school education only
- Test 2, for applicants of high school or college education

Otis Classification Test (Revised), for grades 4 to 8

Simplification

Basically there are but five intelligence tests, which we may call briefly the Primary, Advanced, Intermediate, Higher, and Alpha. The Beta and Gamma tests are adaptations of the Intermediate and Higher, respectively, and may be scored by the IBM scoring machine as well as by hand. The Employment Tests 1 and 2 are adaptations of the Intermediate and Higher, respectively, for use in business institutions. The Classification Test is a combination of the Beta test and an achievement test.

Purpose

These tests are designed to measure what is commonly known as intelligence or mental ability, which may be thought of as the ability to learn or the ability to adapt oneself to one's environment. A more specific purpose is to measure a pupil's ability to succeed in school work. The tests aim to measure innate mental ability, that is, apart from or independent of one's education or achievement. The Classification Test is designed to measure both mental ability, as defined above, and achievement (knowledge gained in school and out) the two scores to be combined into a single measure which may be used for classification purposes.

Limitations

In giving these and similar tests and interpreting their results, it must be remembered that it is not possible to test innate mental ability directly; that is, we can measure it only as it manifests itself in performance which also involves knowledge. Hence the scores of two persons are comparable as measures of innate mental ability only when they have had approximately equal educational opportunity.

Validation

In general, the method of evaluating the items of these tests was to determine the degree to which the passing or failing of an item by a pupil correlated with the pupil's ability to succeed in school work. Only those items were retained which showed definite diagnostic value in this regard.

Forms

Each test is provided in two, three, or four "Forms." The different Forms of a test are alike in construction and difficulty, but differ in content.

Manuals

Each test is accompanied by a Manual of Directions stating the purpose of the test, its manner of construction, reliability, etc., and giving detailed directions for administering and scoring and for the interpretation and use of the results.

Scoring

The scoring of the tests is all objective, that is, requiring no judgment on the part of the scorer. A Key is furnished with each package of tests giving the right answers arranged to facilitate scoring.

The Classification Test and certain Forms of the Beta and Gamma Tests can be scored by the IBM scoring machine, when a machine scoring answer sheet is used.

A class record is furnished in each package of tests for use in recording the scores of a class.

Usage

The Otis Group Intelligence Scale has been in use for twenty-seven years, and the Self-Administering Tests for twenty-three years. Altogether it is probable that some thirty million persons have been tested by Otis tests. These include pupils in all grades, college students, entrants into the United States armed forces, applicants for positions, and others. They are used also in Canada and Mexico, in South America and Europe.

A. S. O.

Pintner General Ability Tests: Verbal Series. The Pintner General Ability Tests have been developed to meet the need for a complete series of group tests for general intellectual ability covering all levels from kindergarten age to maturity. There is a Verbal Series of four batteries made up of tests measuring essentially verbal functions; and there is a Non-Language Series made up of tests measuring functions independent of any word knowledge. The four batteries which constitute the Verbal Series of the Pintner General Ability Tests are as follows:

1. Pintner-Cunningham Primary Test by Rudolph Pintner, late Professor of Education, Teachers College, Columbia University and Bess V. Cunningham, Professor of Elementary Education, University of Toledo, is designed for kindergarten, grade 1, and the first half of grade 2. This test is composed entirely of pictures. It contains seven different subtests covering as many different aspects of mental ability. There are three forms: Form A, Form B, and Form C. The time for administering is about 25 minutes.
2. Pintner-Durost Elementary Test by Rudolph Pintner and Walter N. Durost, formerly Research Associate, Institute of School Experimentation, Teachers College, Columbia University, is designed for grades 2^5 to 4^5. This battery is in two scales: Scale 1, Picture Content, and Scale 2, Reading Content. Either scale may be used alone or the two together. There are two forms: Form A and Form B. The time for administering each scale is 45 minutes.
3. Pintner Intermediate Test by Rudolph Pintner is designed for grades 4^5 to 9^5. This battery measures eight different aspects of general mental ability through the following eight subtests: Vocabulary, Logical Selection, Number Sequence, Best Answer, Classification, Opposites, Analogies, and Arithmetic Reasoning. This battery is semi-self-administering, in the sense that all the instructions are given before the pupils begin the test, although separate time limits have been established for the subtests. This battery is published in two equivalent forms, Form A and Form B.
4. Pintner Advanced Test is designed for Grade 9 and above. It is published in two equivalent forms. It is similar to the Pintner Intermediate Test, and may be considered an extension of that battery to higher ability levels.

The use of four separate batteries in the Verbal Series to cover the grade range from kindergarten through high school was decided upon as the best possible arrangement of tests to insure the inclusion of enough material to measure all levels of ability effectively and reliably. All batteries yield scores which are articulated to a single standard score scale; thus direct comparability of results from one battery to another is made possible.

The question of the validity of the Pintner General Ability Tests has been approached both from the consideration of the content of the test and by certain relevant statistical data. Only those subtests which have stood the test of time still remain in the batteries. The subtests are intended to measure a variety of verbal abilities which are more or less independent. Partial correlations (with Vocabulary removed) on the Intermediate Battery vary from .02 to .57, with a median of .30. Partial correlations on the Advanced Battery vary from .08 to .53 and the median is .24. This indicates that different abilities have been sampled by the tests. Further correlations with school achievement and with other psychological tests have been made. The correlations are of such magnitude as to indicate the value of the Pintner Tests as an aid in the prediction of school achievement.

Three methods have been employed in expressing the reliability. These methods are: the split half reliability quotient, the inter-form reliability quotient, and the probable error of the test score. In the Intermediate Test a correlation between scores on odd and even items yields a reliability quotient of .94. The split-half reliability quotient on the Advanced Test is .90. The split-half reliability for the Pintner-Durost is .92 for Scale 1 and .97 for Scale 2.

An unusually thorough experimental program was conducted in connection with the selection of items, the balancing of forms, overlapping of batteries and establishment of norms. Norms for the Primary Test are based on 28,000 cases, the Elementary on 55,000 cases, and the Intermediate and Advanced on over 300,000 cases. Scores have been converted into standard scores, making the results from one test to another directly comparable.

The publisher of the Pintner General Ability Tests is World Book Company, Yonkers-on-Hudson, New York.

B. C. W.

Porteus Mazes, Vineland Revision. The Porteus Mazes are a series of twelve non-language paper and pencil mazes constructed by Stanley D. Porteus, and are designed to measure certain aspects of intelligence. Also, through the use of the qualitative performance data, information can be derived for clinical insight into the evaluation of temperament.

Dr. Porteus' early experience with the Binet-Simon test (and subsequent Stanford Revision) showed that intelligence tests of this type did not forecast some of the important abilities of high grade mental defectives. It was observed that within the same mental age level, wide differences existed in the planning capacities of these individuals. The mazes were devised to give some kind of measure of this planning capacity and prudence. It is to be made clear that the Porteus Mazes are not intended as a substitute for the usual intelligence test, but rather to be used as a supplement to the Binet in order to explore additional factors not covered by that type of general intelligence test.

In a recent study[2] of the quality of performance, another use of the test has been added in the exploration of temperament factors. The test situation, in addition to its quantitative "test age" score also involves a work sample situation. Such behavior as persistent lifting of the pencil from the paper (contrary to the instructions), the cutting of corners, the going in a wrong direction, etc., can be considered to indicate some of the individual's slipshod habits or "nervous" manner which is believed to contribute heavily to a general social adjustment pattern. It has been found that three times as many delinquents are above the critical score as normals which, in combination with the total clinical picture, gives the psychologist an insight into the type and kind of self-standards of action followed by a patient. The author emphasizes the need to use this data as a part of the total clinical case history rather than isolating the data in the sterility of pure psychometrics.

Two surveys have shown that the Porteus Mazes are second only to the Binet in frequency of use in American clinics.

The scores on the test can be used in personnel counseling, the separation of individuals within any one mental age level to aid in the evaluation of the proper program of social and work-load adjustment.

The directions for administration are self-explanatory.[1] The test covers the age ranges from years three through twelve, year fourteen, and adult I. The individual to be tested is confronted with a series of mazes presented one at a time and which are on a scale of increasing difficulty. As soon as the subject makes an error, the maze is removed and a second trial given. There is no time limit although the time factor may, in some cases, have clinical significance. Where temperament is being explored, slight changes are made in the directions and procedures and are fully outlined.[2]

In the twenty-one years the test has been available, standardization has been accomplished in numerous studies. The original studies are based on over two thousand cases in comparison with their chronological ages and Binet mental ages.

The validity of the test has been demonstrated in a series of studies reported by the author.[1] First, at Vineland School, the maze was correlated with the ratings of industrial capacity, socio-industrial prediction and educational capacity. The Mazes correlated .67, .55, and .27 respectively. Second, a series of five studies was undertaken by sampling the Institution's population at various age and ability levels compared with social indices and the supervisor's ratings. The Maze correlated .70 with social ratings scale and .56 with supervisor's rating. Third, the Mazes were compared with other batteries of tests such as the Stanford-Binet, Porteus Form and Assembling, Pintner-Patterson Performance Scale, Knox Cube, and Goddard Form Board. The results indicated that the Maze has a closer relationship to social sufficiency than does the Binet.

The reliability of the test has not been derived by the usual test re-test or statistical methods. The form of the data does not allow use of any of these methods. The reliability comes through the confidence gained in its continued use at various clinics.

A cursory survey of the literature shows this test has been used in connection with the following problems: sex differences, to test industrial capacity and social adaptability, with delinquents, with the mentally unstable and psychotic, adult hospital patients, birth injury cases, the deaf, performance difficulty resulting from vitamin deficiency, hookworm infested children, Negro children, African natives, Australian aborigines, and Asian primitive peoples.

The test is published by the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

References:

1. Porteus, S. D. *The maze test and mental differences.* Vineland, N. J., Smith, 1933.
2. ———. *Qualitative performance in the maze test.* Vineland, N. J., Smith, 1942.

W. F. M.

Pressey Senior Classification Test, Pressey Senior Verifying Test. The Pressey Senior Classification Test constructed by S. L. Pressey and L. C. Pressey in 1923 is a brief scale designed to measure general intelligence or the ability to do school work. It may be used to compare classes, schools, or other groups as to grade placement and general ability. The test is a group test to be used in grades 7 through 12, but it also has been used with adults.

The scale consists of four tests: (1) opposites; (2) information; (3) arithmetic; and (4) practical judgment or common sense. The

96 items are arranged in cycle order in the form of questions. The multiple choice answer method is used. The print is small and the lines are single spaced which increases the reading difficulty for many people. Administration time is 16 minutes.

The value of this test as an instrument in vocational counseling lies in the fact that adult norms are available in centile ranks and standard scores for different population samples. These norms were developed through the Study of Employment Stabilization Research at the University of Minnesota in 1933.[4] In addition to these adult norms, educational norms, corresponding to the typical performances of pupils in each school grade from 7 through 12, are available. It is helpful to have this measure of educational status for adults. It is considered by Bingham to be as valid as "grade actually reached on leaving school" which was many times the best means available for comparing adult ability at the time this test was constructed.[2]

Validity was investigated by comparing the scores on the Senior Classification Test with pooled results of teachers ratings and marks for the preceding school year for 144 pupils in 6 rooms. Correlations for the "best score" and teachers' ratings averaged .77. The authors conclude that this measure is adequate to measure the general ability of junior and senior high school students.[5]

Reliability was found by Darley to be sufficiently high to use the scores on this test for individual diagnosis.[3] The study on Selected Occupational Tests in which the Pressey Tests were a part of the battery revealed that the Pressey Tests differentiated the fast workers from the average better than the clerical tests used in the battery, although the difference was not highly significant.[1]

The Senior Verifying Test is not, according to the authors, a second form of the Senior Classification Test. However, it is to be administered a day or two after the Senior Classification Test (never on the same day or before) as a check on the reliability of the first score. The higher of the two scores obtained is taken as the final rating rather than the average of the two scores or either one singly. This "best score" is considered by the authors as being a highly trustworthy indication of general intellectual ability.

The Pressey Senior Verifying Test is organized on the same four cycle plan and is equated as to difficulty with the Classification Test. The four tests comprising this scale include (1) synonyms; (2) differences; (3) numerical reasoning; and (4) information.

The norms for the verifying tests are slightly higher than for the classification test. This is true for men only. The authors say that this is probably due to practice effect. For women, however, the difference in average norms is markedly higher on the verifying test. The authors suggest that since women usually get lower scores on tests heavily weighted with arithmetic problems, this may be the reason women do better on the verifying test, for on it the arithmetic problems have been omitted.[5]

These tests may be obtained from the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

References:

1. Andrew, D. M. and Paterson, D. G. *Measured characteristics of clerical workers.* Minneapolis: University of Minnesota Press, 1934.
2. Bingham, W. V. *Aptitudes and aptitude testing.* New York: Harper and Brothers, 1937.
3. Darley, J. G. The reliability of the tests in the standard battery, in *Research Studies in Individual Diagnosis,* edited by D. G. Paterson. Minneapolis: University of Minnesota Press, 1934.
4. Green, H. J., Berman, I. R., Paterson, D. G. and Traube, M. R. *A manual of selected occupational tests for use in public employment offices.* Minneapolis: University of Minnesota Press, 1933.
5. Pressey, S. L. and Long, G. S. *A new idea in intelligence testing.* Ohio State University Educational Research Bulletin, 1924, 3, 365–368.

E. C. J.

Scovill Classification Test. This test, developed by John L. Anderson and Millicent Pond, is to be used to measure intelligence of applicants in industry. Through the use of a simple scoring method the applicant is not penalized if he happens to be illiterate or non-English speaking. While some distributions are given in the manual for comparative purposes,[4] it is assumed that each industry will draw up its own set of norms since requirements for different types of industrial work differ widely.

The test battery consists of eight tests. Seven were selected subtests from the original Army Alpha and Beta Examinations. The selection was made on the basis of the published test results by the Division of Psychology of the Surgeon Generals Office of the United States Army as reported in the Memoirs of the American Academy of Science, Vol. XV. The criteria for selection was the extent that the distributions approached the normal curve and the range of scores. The number checking and digit symbol substitution tests were modified to the extent of adding ten more examples to each test to eliminate the restriction of the test scores to the upper ranges and to keep the time interval the same for all sub-tests. The geometrical construction test was revised and re-standardized so that a wider range of responses could be obtained.[1]

An eighth test was added to this battery which consists of a circle dotting test designed to approach a peg board situation. This test was not standardized or validated and the scores are not included in the total.

The directions to administer the test are very simple and adequately explained. Additional equipment is needed other than test booklets. Eight boards with the practice exercises painted on in large enough proportions to be seen easily from all parts of the testing room must be made. A work period of fifty minutes is required to complete both the verbal and non-verbal parts of the test.

The standardization, validity and reliability of these tests is assumed from the data accumulated from the testing by the Army in the first World War.[1]

With the assumption of the usefulness of the test itself already proved, Pond then proceeded with a series of studies [1 2 3] at the Scovill Manufacturing Company in Waterbury, Connecticut, to see if intelligence could be considered a factor in considering an applicant for a job in a manufacturing concern.

From these results, an outline of procedure in the use of this test can be paralleled by any other company. First, it was found that the level of performance on the test and success on the job were related. Success was defined as the individual not terminating his employment for personal reasons within a six month period. Second, critical scores for the selection of toolmaker apprentices was found which improved the efficiency of selection from 60% to 82% in comparison with the usual interview-personal evaluation method of personnel selection. Third, in clerical jobs it was found that there was a definite and consistent relationship between intelligence test scores and advancement in clerical work. This applied, in general, to both men and women.

Fourth, in an analysis of the intelligence test scores of 9,075 men in 42 occupations, the scores correlated .74 with an occupational rating based on the estimates of the degree of intelligence required for the jobs. Such an array developed by a company is of definite value to employment managers. Because of the overlapping of the ranges of these scores for the various jobs, an applicant with a certain test score has one of several occupational categories in which he has a better than average chance for success. Information of this type gives the employment interviewer something other than his subjective judgment on which to place his decision to hire a new employee.

The publishers of this test is the Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

References:

1. Pond, M. *Selective Placement of metal workers.* Journal of Personnel Research, 1927, *5,* 345–368, 405–417, 452–466.
2. ———. *What's new in employment testing.* Personnel Journal, 1933, *11,* 41–56.
3. Pond, M. and Bills, M. A. *Intelligence and clerical jobs.* Personnel Journal, 1933, *12,* 41–56.
4. Psychological Corporation. *Scovill Classification test: manual of directions,* New York.

W. F. M.

Stanford-Binet Intelligence Test (1937 Revision). This revision was constructed by Lewis M. Terman and Maud A. Merrill. It differs from Terman's original scale, published in 1916, chiefly in the following respects: (1) The new revision includes two parallel scales (L and M) which test the same functions, yield comparable IQ's at all levels, and are therefore completely interchangeable. This makes it possible to alternate the scales in re-testing children and thus to some extent avoid practice effects. (2) The new scales extend downward to two years and upward so as to give sufficient top for scoring the intelligence of highly superior adults. (3) The new scales are less verbal in the lower range than was the 1916 revision. (4) Both scales are much better standardized than the original Stanford-Binet.

Several field assistants spent two years giving two tentative scales to 3184 children in carefully selected areas of the United States. Much effort was made to obtain a standardization group as nearly as possible representative of the various census occupational levels in the United States. The group represented samplings of the child population in 17 communities in 11 different states. All subjects were within one month of a birthday when tested, and were given all the items of both tentative scales and a large number of additional items to permit the discarding of those not entirely satisfactory. The criteria of retention was substantial correlation of the item with the composite score on the two scales, ease of scoring, and time required for administration.

The revised scales serve the same purpose as the original Stanford-Binet; that is, they test almost exactly the same ability that the original scale tested and do it more reliably. The reliability coefficients of Scale L versus Scale M range from .98 for subjects below 70 IQ to .90 for subjects of 130 IQ or over. The probable error of the IQ ranges from about 1.5 points for subjects below 70 to about 3.5 points for subjects above 130. For subjects between 90 and 109

IQ the probable error is approximately 3 points. See the book by McNemar for a detailed statistical analysis of the standardization data.

The time required for administering one of the scales is about 35 minutes for pre-school children and 60 to 90 minutes for subjects in the upper age ranges.

Application of Form L to 2050 Scottish children of ages 6 to 12 yielded results closely comparable to those found for American children.

The new revision is described by Terman and Merrill in *Measuring Intelligence,* which gives complete directions for administering and scoring all the test items in the two scales. The directions both for administration and scoring are more specific than those for the 1916 Stanford-Binet. An abbreviated manual in handy form has also been provided.

The validity of the new scales is unquestionably somewhat greater than that of the 1916 revision. This results in part from the larger number of test items in each of the scales (more than twice as many) and in part from the more detailed instructions for administration and scoring of the individual items.

Special attention is called to the fact that the IQ's of subjects tested even as early as 2 to 5 years have considerable predictive value. This was demonstrated by Bradway's retests of some of the younger members of the standardization group after the lapse of 10 years.

The publisher of the 1937 Stanford-Binet Revision is the Houghton Mifflin Company, No. 2 Park Street, Boston Massachusetts.

References:

1. Bradway, K. P. IQ constancy on the Revised Stanford-Binet from the preschool to the junior-high school level. *J. Gen. Psychol.,* 1944, 197–217.
2. ———. Predictive value of Stanford-Binet preschool items. *J. Educ. Psychol.,* 1945, 1–16.
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5. Hoakley, Z. P. A comparison of the results of the Stanford and Terman-Merrill Revisions of the Binet. *J. Appl. Psychol.,* 1940, 75–81.
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10. Terman, L. M. and Merrill, M. A. *Measuring intelligence.* Boston: Houghton Mifflin Company, 1937.

L. M. T.

Terman-McNemar Test of Mental Ability. The Terman-McNemar Test of Mental Ability is a revision of the Terman Group Test which was prepared by L. M. Terman in 1919. The widespread and continuous usage of the TGT attests to its fundamental validity and dependability. The revision, which was prepared by Quinn McNemar and L. M. Terman in 1941, consists of seven subtests: Information, Synonyms, Logical Selection, Classification, Analogies, Opposites, and Best Answer. All numerical and arithmetical material has been eliminated in favor of more homogeneous verbal items. Two-choice questions have been replaced by the more reliable multiple-choice type of response. Scoring is facilitated by a perforated key, and the test may also be used with separate answer sheets for machine scoring. Two strictly comparable forms are available.

Items were selected on the basis of satisfactory increments from Grades 7 to 9 to 11 in the percentages giving correct responses, and on the basis of correlation with a total score based on all 465 items in experimental forms. These items analyses were based on 1,200 cases with complete records. The items in each subtest have been arranged according to difficulty.

The standardization was based on a 10% sample of 190,000 tests given in 200 communities in 37 states. The norms are adequate for the ages represented in grades 7 through 12, and are expressed in terms of standard scores or as IQ's derived by a deviation method so as to yield an average of 100 and an S.D. of 16 for each of the several age levels. A simple table facilitates the translation of scores to IQ's.

The reliability coefficient, by both the split-half and form versus form methods, is .96 for a single age range.

Publisher: World Book Co., Yonkers, N. Y.

Q. McN.

Thurstone Test of Mental Alertness. The Thurstone Test of Mental Alertness, constructed by Thelma Gwinn Thurstone and L. L. Thurstone and sponsored by the American Council on Education, is intended to appraise what is generally called scholastic aptitude or general intelligence. It has been found that while most high school courses depend more upon linguistic abilities, quantitative abilities may be more significant for scientific and technical curricula.

That this fact received consideration is apparent, since separate linguistic and quantitative scores are obtained in addition to the total score. The examination is a four-page booklet containing four types of test questions: Same-Opposite and Completion items, which yield a score in linguistic ability called the L-score, and Arithmetical Reasoning and Number Completion items yielding a quantitative thinking score, the Q-score. These two subscores do not represent primary mental abilities, but represent two groups of abilities significant for curricula that are dominantly linguistic or technical.

The directions for administration are self-explanatory. The time limit is twenty minutes. The test was standardized on 3820 pupils in nine high schools in scattered parts of the country, and separate norms are reported for each of the four high school grades. The test results have been found to correlate about .50 with scholarship.

This test is adapted from the American Council on Education Psychological Examination for High School Students, and has the advantages of more compact arrangement, requirement of less student time, greater ease in administration due to the single over-all time limit, and simplification of scoring.

The publisher of this test is Science Research Associates, 228 South Wabash Avenue, Chicago 4, Illinois. One form of the test is adapted to hand scoring, another to machine scoring.

B. J. M.

Tiffin-Lawshe Adaptability Test. This test constructed by Joseph Tiffin and C. H. Lawshe, Jr., purports to measure general mental ability and mental alertness, and is specially designed for adult use in employment and other personnel situations.

The test which is available in two equivalent forms has been found useful in grouping employees and applicants into five broad mental ability categories.

The directions for administration are self explanatory and the authors have avoided the use of terms such as mental ability and intelligence on the face sheet of the test.

The scale which requires 15 minutes was standardized on high school students, college students, Naval Electrical Trainees, and numerous industrial groups. Norms for these various populations are available. Validity has been demonstrated for numerous industrial jobs by means of correlations between test scores and various measures of employee success including supervisory merit ratings, production data, length of time to learn the job, etc.

Estimates of the reliability of the test have been obtained with various groups by means of both split half and retest procedures and coefficients of reliability range from .60 to .93 with a median value of .90.

The publisher of this test is Science Research Associates, 228 S. Wabash Avenue, Chicago 4, Illinois.

Reference:

1. Tiffin, J. and Lawshe, C. H., Jr. The Adaptability Test: A fifteen minute mental alertness test for use in personnel allocation, *Journal of Applied Psychology,* Vol. 27, No. 2, April, 1943.

C. H. L.

Unit Scales of Aptitude. The Unit Scales of Aptitude were constructed by M. J. Van Wagenen to measure separately the four abilities that commonly enter into verbal mental tests: rate of mental performance, ability to see and make use of relationships, vocabulary and range of general information. The rate of mental performance is measured by the number of 30-word paragraphs, of approximately equivalent reading time, in which one word in the last half that does not fit in with the meaning of the paragraph is crossed out, that can be read in five minutes. The scores in the perception of relations or analogies scales, in the two vocabulary scales and in the range of general range of information scales indicate the level of difficulty at which the subject knows the answers to one-half of the tasks attempted at his score level of difficulty. The scores may be referred back to the items in the scales for a concrete illustration of the difficulty of the tasks.

Five duplicate forms of each scale were constructed at the same time from a pool of more than six hundred items in each function whose difficulty levels had been determined on the basis of the proportions of two hundred pupils in each of grades four, six, eight and twelve, who did each item correctly. In the rate of mental performance scale the same set of fifty-six tasks is used for all groups of pupils, but changes from form to form. In each of the other four functions overlapping groups of forty items spaced equally distant apart in difficulty were selected for four successive levels of performance but with the scores independent of the level of performance and the same for the same group of pupils in all four performance levels. A different set of items were used in each of the five different forms. The first level of performance or Division 1 is for use in measuring pupils in grades 4 and 5, Division 2 for those in grades 6 and 7. Division 3 for those in grades 8 and 9, and Division 4 for those in grades 10–12.

The chronological age standards from age 9 through age 19 were derived from the data from two measurements with forms A and B of more than 25,000 pupils in grades 4 through 12 in a large city school system, in which the five duplicate forms were used a year apart in a research project to determine the amounts of change that took place in each function from age to age for all pupils over a four year interval. On the basis of these age standards, tables were developed to give a pupil's per cent placement in each function or the per cent of the way he stands between the poorest and best pupil in that function in a representative one-thousand pupils of the same age. These per cent placements remain constant for the pupils within the limits of the probable errors of measurement if the pupils' rates of change from age to age do not differ from what is normal for such pupils. The per cent placements have the advantage of showing any decided variations from the normal rate of change over a period of years in any one or more of the functions. The five per cent placements in the five functions are combined into a single aptitude index with which the per cent placements are quantitatively comparable. The aptitude index is comparable to the intelligence quotient, but does not involve the use of the mental age or the discrepancies that accompany dividing a mental age by the chronological age.

The reliability of the scale scores in each of the separate functions is measured in terms of the scale units. It is approximately two and a half scale units in each function in comparison with an age standard deviation of approximately fourteen units. For predicting success in school attainment as a whole a special form has been developed for indicating normal school attainment in grades 4 through 8 for a pupil of any age and aptitude index. The variation from this normal attainment is an index of the effect of such other factors as drives, length of school attendance, quality of instruction and the like. These variations from normal performance are also significant. For example, pupils rated high for leadership independently of the tests come from those with school attainments above normal for their age and aptitude index.

The use of Division 4 in a large industrial plant with the aptitude indices based on the 18 year standards showed considerable increase from the lower to the higher indices in the independently estimated quality of production (r = .55) but not in the independently estimated quantity of production within the limited range of indices of factory workers.

A scale with a wider range of item difficulties in the perception of relations function is published separately for use with adults.

The Unit Scales of Aptitude are published by the Educational Test Bureau, Inc., 720 Washington Avenue, S. E., Minneapolis, Minnesota.

M. J. V. W.

Wechsler-Bellevue Intelligence Scale. This intelligence scale was constructed and standardized by David Wechsler and published in 1939. The scale consists of 11 subtests, 6 tests called Verbal and 5 Performance which permit the examiner to obtain separate Verbal and Performance as well as Composite (Full) scale IQ's. The scale was standardized on over 3000 cases, ages 6–60, but is primarily intended for testing of adolescents and adults.

The author's conception of the IQ is that it is a measure of relative position. IQ's of adults are obtained by comparing the score obtained by each individual with the mean score of his own age group and not, as in the Stanford-Binet by an assumed average adult mental age. The author has shown that it is not possible to assume an overall adult mental age which remains constant throughout adulthood because scores on all intelligence tests decline with age beginning at about 25 or 30 years. The scale accordingly provides IQ tables for separate age groups throughout its range.

The author believes that in an individual intelligence examination it is possible to obtain not only a general intelligence rating, but personality and other qualitatively useful data which may help in clinical diagnosis. Each of the subtests has been equated to each other in terms of standard scores which makes it possible to compare the ability of the individual on the various functions purportedly measured by the test. Pattern analysis in terms of "signs" has been worked out for 5 clinical groups. Another feature of the scale is that by combining certain of the subtests one may obtain a measure of mental deterioration.

There is now substantial literature on the use of the Wechsler-Bellevue Scale which has been summarized by I. Rabin. Correlations with other intelligence scales including the Binet, range from .60 to .90. The author's own original correlation with the Stanford-Binet gave a Pearson coefficient of .82 ± .03. The correlation between Verbal and Performance portions of the scale varies with age at which correlations are made and with level of intelligence of subjects compared. The reliability of the test as measured by test retest correlations is .94 ± .018; as measured by split half method, it is (4 x 4 tests) .90 ± .04.

The scale was extensively used by the armed forces as an individual examination during the War and various abbreviated forms of it were tried. A full alternate form, however, called the Wechsler-Bellevue Form II has recently been completed by the author and is now available. Both forms of the scale are put out by the Psychological Corporation of New York, 522 Fifth Avenue, New York City. The manual of Form I which is contained in the author's *Measurement of Adult Intelligence,* is published by the Williams and Wilkins Co., Baltimore, and must be bought separately. The Manual of Form II is put out by the Psychological Corporation.

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D. W.

Wonderlic Personnel Test. The *Wonderlic Personnel Test* was so named in order to lessen the hesitancy and fear that tests are apt to create in persons taking mental ability tests. Furthermore, when an applicant for employment does not meet the critical score, he is not turned down because of "lack of mental ability."

The *Wonderlic Personnel Test* was designed and created for testing adults in business and industrial situations. They are useful as a selection instrument in hiring applicants and also as an indicator of future possibilities. But it is not intended that this test should be used by those who are not familiar with psychological procedures and techniques in mental testing; the examination is not useful unless it is carefully used, and norms are established for each situation in which it is to be applied.

There are five alternate and equivalent forms, A, B, D. E, and F. Forms A and B contain original items created by the author. Forms D, E and F are adaptations and restandardizations of the Otis Test higher form item.

It requires only 12 minutes. It is practically self-administered. For this reason it is especially adaptable to business situations. All the necessary directions are given on the first page and sample questions indicate clearly to the applicant the type of questions he will find within the test. The fifty items on each form constitute the examination and are administered by the subject without interruption. The examiner need only distribute the blanks, see that the directions are understood, and give the beginning signal and ending time.

New types of items are included in Forms A and B, as contrasted with Forms D, E and F. Included are Analogies, Analysis of Geometric Figures, Arithmetic Problems, Disarranged Sentences, Sentence Parallelism with Proverbs, Similarities, Logic, Definitions, Judgment, Direction Following using Clerical Items, Special Relation Items, etc.

Careful Standardization and construction has made it possible to shorten testing time to 12 minutes. A reliable determination of mental ability can be determined in this short interval. Where batteries of tests are administered, it is possible to get a wider sampling of various traits in shorter time intervals.

This test can be administered by any well-trained clerk. It is of the self-administering type and can be given singly or to groups of individuals. The directions in either case are the same.

The test was standardized in a business situation on adults ranging in age from 20 to 65 with various work backgrounds. Use of adult groups in industry makes the test particularly suitable for employment situations.

Comparative norms for large groups of adults are available for: (a) 12 minute administration; (b) sum of two 12 minute tests when administered together; (c) unlimited time. Tables for conversion of Personnel Test scores to equivalents on Otis Self-Administering Test of Mental Ability, Higher Form, have been prepared.

Psycho-Technical Information

All of the individual cases used in test construction were either applying for positions or were employed in various types of business organizations. This study has been in progress during the past several years. No other available test has been established on such a large number of cases obtained on adults in industrial situations. The features of the test are here summarized:

1. *Order of Difficulty*—this was established by an item study of the work of thousands of individuals. The questions selected range in difficulty from extremely easy to extremely difficult for adult groups. There is an equality in the steps of difficulty throughout the testing range. There is a normal distribution of difficulties with a mean about 60%. The correlations between position in test and item difficulty are all above .90.

2. *Standardization*—the test was standardized in the situation in which it is to be used, instead of the usual educational situation.
3. *Short time limit*—the 12 minute time limit permits use of tests where longer intervals are prohibitive. Where more time is available, two forms may be given, resulting in even greater reliability.
4. *Reliability*—the reliability of this test is as good as that of longer tests. Comparing the results of one 12-minute test taken immediately after another gave correlations of .82 to .94, indicating good reliability. When a correction is applied to make the test group as heterogeneous as the one employed by Otis in standardizing the S-A test, the reliability becomes .93. Comparison of the number of odd items against even numbered items resulted in a high correlation and similarly indicated good reliability with r = .88 to .94. These are particularly significant for the relatively homogeneous groups used. The probable errors of scores are only about 1.3 to 1.6 points.
5. *Validity*—this was proved in actual business situations. This test has been shown to be a valid instrument in determining success on a number of different jobs. The number of questions right clearly distinguished between good and poor groups of employees differentiated on work records accumulated over a period of five years. At the mean there was a difference of four and seven points respectively for two groups, even though many of the employees had previously been selected on the basis of their performance on the Otis Self-Administering Test of Mental Ability, Higher Examination, Thirty Minutes—a factor which made for a homogeneous group in respect to the trait measured. Correlations between the Personnel Test and the Otis Test are from .81 to .87.
6. The test is standardized so that it may be used with a set time limit or may be administered with unlimited time.
7. The two new forms A and B have been so devised as to be equal in per cent of difficulty for units of ten questions, as well as for total score. They were developed following the pattern of Forms D, E and F.[11] Thus, five closely equivalent forms are readily available.

This test is available only to qualified personnel people who will use it with care and discrimination. It is not for general sale and distribution. It is for use in business and industrial situations only. Educational institutions may use the test only for demonstration and teaching purposes for classes in Personnel and Industrial Relations administration.

Orders may be sent to: E. F. Wonderlic, 750 Grove Street, Glencoe, Illinois, or The Psychological Corporation.

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E. F. W.

INTELLIGENCE TESTS, EVALUATION OF. Intelligence is frequently defined as ability to adjust to one's environment and to learn from experience. It is therefore logical to expect it to play a part in vocational adjustment. As measures of ability to learn, tests of intelligence have tended to be scholastic aptitude tests, developed primarily for the prediction of and validated against school success. Some have been modified for business or industrial selection but these remain adaptations. A minority which have been developed for clinical diagnosis tend to differ in administration, content, scoring, and type of norms.

Whether the test is to be validated against educational or vocational success, the selection and refinement of a suitable criterion is generally difficult. Teachers' marks and supervisors' ratings are notoriously unreliable, but they are what determine graduation and promotion. Output in industrial work or volume of sales in business may seem an objective criterion until one investigates the effect of tacit agreement on production or of type of article sold or counter location on sales volume. If earnings are used as a criterion, the two equally important corporations who pay their presidents $100,000 and $400,000 annually create a problem. In using intelligence tests, counselors need to keep in mind the question of the *type of success* the test actually was shown to predict, and the reliability and validity of the *criterion* of success, as well as the accuracy of the prediction.

Educational Intelligence Levels

Great differences exist between the intelligence levels of students in different schools and colleges, and since grades are given at least partly on the basis of the local distribution of talent, schools and colleges vary greatly in the intellectual demands made on their students. Average freshman I.Q.'s range from approximately 90 to nearly 130 depending on the college. In two typical liberal arts colleges some students of less than 100 I.Q. manage to graduate, but about 65% of those with I.Q.'s below 110 fail, while in another there are practically no freshmen I.Q.'s of less than 110. Curricula vary in their difficulty: one nation-wide study in the 1930's reported median I.Q.'s of 114 for high school boys in preparatory and technical courses, 108 in scientific curricula, 106 in academic curricula, 104 in commercial, and 92 in trade courses. Terman's studies of gifted children have shown that persons with I.Q.'s of more than 140 make generally better adjustments in school and in later life; others report that they choose their courses more wisely and understand their own abilities and interests better than do others. Proctor's thirteen-year follow-up showed that children who in 1917–18 had higher I.Q.'s had, in 1930–31, more education than those who had made lower scores.

Occupational Intelligence Levels

As intelligence plays a part in determining the amount and type of education obtained, so also in the level and type of occupation entered. Data gathered in World War I, and reported by Fryer and Sparling (2), demonstrated that occupations can be grouped according to intelligence levels. Although open to criticism concerning the nature of the sample and the conditions of testing, these results have been confirmed by other studies in industries, in social agencies and in the Armed Forces of World War II in America and abroad. The existence of considerable overlapping between occupations in the same part of the scale makes caution necessary in the use of occupational intelligence norms (e.g., some file-clerks are more intelligent than the average accountant, so that a man with an I.Q. between the means of those two groups may be successful in either field, or in an intermediate field such as bookkeeping). Despite this, such norms are useful as a rough guide to appropriate levels of aspiration and endeavor. Fryer and Sparling's data, still the most useful, indicate minimum desirable I.Q.'s as follows:

TABLE I

Minimum Desirable I.Q.'s and Occupational Levels

Higher Professional	120
Lower Professional	110
Clerical and Technical	100
Skilled	90
Semi-Skilled	80
Unskilled	70

Similar analyses should be made of the more adequate data of World War II, with necessary corrections for the effects of Selective Service on specific occupations.

Status in a specific occupation is not so highly related to intelligence. This is because of the greater importance of personality factors in occupations such as teaching and selling, and of special aptitudes in factory work, if the individual has more than the minimum intelligence required for entry into the occupation and establishment in it. Additional increments of intelligence may be of little value, or may produce dissatisfaction with work that is insufficiently challenging, as demonstrated by bright high school graduates employed as packers at R. H. Macy's in the 1920's. More evidence is needed to document and illustrate the nature of the operation of intelligence in job satisfaction.

The Prediction of Vocational Success by Intelligence Tests

Early in the 1920's E. L. Thorndike tested 2000 New York City 14 year old boys and girls, and followed up after eight years to ascertain their vocational status. Intelligence test scores were significantly related to educational achievement, but were of no value in predicting success in vocational fields other than clerical work. The conclusion was that psychological tests cannot be used to predict success in vocational life. The results caused a commotion when published but are no longer considered crucial because of defects of design (e.g., financial handicaps kept a large proportion of the group from capitalizing their intellectual assets) and because of the results of subsequent more adequate investigations. Several studies of the University of Minnesota, others by the National Institute of Industrial Psychology in England, Pond and Bill's studies of clerical workers, Terman's long-term follow-up of his gifted group, and Proctor's thirteen-year follow-up of 1500 young people tested in 1917–18 have demonstrated that pre-occupational intelligence tests do give an indication of subsequent occupational level and satisfaction. Proctor, for example, found that when their 1930–31 occupations were classified in five levels, the 1917–18 mean I.Q.'s of the persons at each level were, respectively, 97.4, 99.3, 104, 108.1, and 115.

Current Tests of Intelligence

The intelligence tests which are widely used with reasonably good results in vocational guidance are too numerous to be discussed in any detail. It seems wiser to select two of the most thoroughly studied and widely used tests and to treat them at some length, recognizing that another writer might choose other examples. The two tests to be discussed are the Otis Self-Administering Test of Mental Ability, Higher Form, and its derivatives, and the American Council on Education Psychological Examination for College Freshmen. Before taking these up in detail, however, some more general trends and developments in intelligence testing should be considered.

These are related to the analysis of sub-test scores and to the factor analysis of tests and test batteries. From the point of view of the user of tests these are one and the same thing, i.e., an attempt to obtain more sensitive and differentially prognostic measures. In the former activity the counselor (as in the use of Wechsler-Bellevue or California Test of Mental Maturity verbal and performance scores and in the analysis of their sub-tests) attempts to ascertain not only the general mental level of the client but also his special mental abilities, with a view to counseling him concerning the choice of, let us say, technical vs. linguistic or contact occupations. In the latter activity the counselor uses a test such as Thurstone's Test of Primary Mental Abilities, based on statistical analysis of tests and an attempt to isolate their underlying psychological factors.

The Engineering and Physical Sciences Aptitude Test developed at Pennsylvania State College, and the Air Crew Classification Tests of the Air Surgeon's Office illustrate an approach to the construction of selection tests which is intermediate between the more or less *a priori* verbal and quantitative part-scores of the Wechsler-Bellevue, California, and American Council on Education instruments on the one hand, and the statistically pure and experimental but abstract part-scores of the Primary Mental Abilities Tests on the other. These tests or test batteries include no so-called intelligence test and yield no I.Q.'s. Instead, some of the part-scores attempt to measure factors of intelligence such as arithmetic reasoning and spatial visualization, together with more distinct aptitudes such as mechanical comprehension. In standardizing these instruments it is possible and customary to validate each part or sub-test, obtaining differential weights for different occupations. In the Air Forces, for example, one sub-test which is rather heavily weighted for navigator has little weight for pilot. The Occupational Analysis Section of the United States Employment Service has worked along similar lines. There is a very real trend in this same direction with the A.C.E. Psychological Examination part scores and college curricula.

Success with this approach in aviation cadet selection and classification is encouraging, but the California and Engineering and Physical Science Aptitude Tests are untried in this respect, the Wechsler-Bellevue is lacking in occupational validation, the data concerning A.C.E. part-score validation are conflicting, and the Primary Mental Abilities tests are highly experimental.

The facts concerning the A.C.E. are discussed below. Those on the P.M.A. Tests deserve brief mention. Three studies indicate that these tests have differential value in professional or in technical schools, Pennsylvania State College freshmen engineers' semester averages, for example, yielding a multiple R of .51 with selected sub-tests, and Iowa engineering, medical and journalism students being differentiated by their test profiles. However, five students have reported findings of doubtful implication, and three are definitely negative. In the doubtful category are results such as low positive correlation of expected scores between P.M.A. and Kuder parts, correlations between P.M.A. scores and grades equal to but not exceeding those of other tests, satisfactory reliability coefficients but a "need for refinement and improvement of the test and more research on interpretation," and high split-half reliabilities attributed to the speed factor. In the negative group are low correlations with achievement test scores, intercorrelations of part-scores ranging from .20 to .79 and averaging .49, poor order of item difficulty, ineffective items, and failure of the mechanical movements sub-test to predict success in college physics. One is forced to consider the implications of such test scores as hypothetical rather than proven, but research along these lines should be followed up.

The Otis Self-Administering Tests of Mental Ability

The Otis test described here is designed for senior high school, college, and adult use. It has been revamped by Otis for special answer sheet and stencil scoring as the Otis Quick-Scoring Test of Mental Ability and by Wonderlic as the Personnel Test. These are essentially the same as the Otis S.A. with improved scoring techniques, and, in the case of the Wonderlic, improved time limits. All three are widely used; the S.A. tests are described here as there are more data for them than for the other two tests.

Applicability

The Otis should not be relied upon with older college students and superior adults for whom it is probably too easy. A number of investigators agree that when seniors and older persons are tested, it is preferable to use the twenty instead of the thirty minute time limit in order to correct for this weakness. It has been demonstrated, however, that the standing of persons tested with a twenty minute time limit should not be compared with that of persons tested with the longer limit.

Contents

There are 75 mixed items arranged in order of difficulty, some are verbal, some arithmetical, and others spatial; they involve vocabulary, sentence meaning, proverbs, number series, analogies, etc. A recent study suggests that the arrangement of the items is no longer the best possible; for this reason the newer revisions are to be preferred as adequate norms become available.

Administration and Scoring

There are no sub-tests to time, no special directions to give during the examination. Scoring is by means of printed keys, and the score is the sum of the right answers.

Norms

The norms for the test are based on the distributions of scores for about 120,000 persons. Raw scores may be converted into Binet mental ages derived from a combination of Herring-Binet scores and true mental ages as calculated from the distribution of raw scores by age groups. This correction of Otis' data was deemed necessary because of the selective nature of the high school groups used in standardizing the test. Binet M.A. equivalents as given by Otis may be read from Table II which also shows I.Q. (C.A. = 17–6 up) equivalents, percentile rankings for the general population and college students (N = 2516), and A.C.E. Psychological Examination and 1916 Stanford-Binet equivalents.

Bingham has pointed out that Otis' college median is lower than that obtained by the College Entrance Examination Board. As Otis' data come from a number of different colleges and represent all classes, whereas the Board's were obtained from a limited number of highly selective institutions, Otis' college norms are more nearly accurate. That they do not err greatly on the easy side is shown by Table II: the average present-day freshman makes an Otis I.Q. of 109. Otis' median college *student* I.Q. of 111 is equivalent to the 57th college freshman percentile on the A.C.E. norms, which is probably a little lower than it should be after the elimination of lower-ranking freshmen. Differences between colleges are great, so that local norms should be used: Otis' manual reports median I.Q.'s for twenty-one colleges which range from 95 to 123.

Standardization and Initial Validation

Otis' manual gives unusually complete and detailed information concerning standardization and initial validation. Many of the items in the tests were taken from existing instruments. Preliminary editions were tried out on high school groups of about 1000 each. Items were retained if they distinguished clearly between superior young students and inferior older students in a given grade; the criterion of validity was therefore rapidity of school progress. This suggests, of course, that the test might not be a very valid one for non-academic purposes. The age and grade norms are based on large samples from various sections of the United States, not a random nor a representatively selected sample, but one large and varied enough to be adequate: the number for grade 12, for instance, is 15,715; for grade 6, 24,724; for college students, 2516 from 21 colleges. Otis has revised the norms since publication, taking into account data supplied by others.

Reliability

Forms A and B have an inter-correlation of .92. Others have obtained reliability coefficients ranging from .90 to .97 with 20 minute, and of .86 with 30 minute, adult groups.

Validity

Otis has suggested that the method of standardization is the best indication of validity in an intelligence test. He also attempted validation through correlation with various criteria. The correlations with high school scholarships (marks) in several schools were .55, .57, and .59, the numbers ranging from 157 to 249. Segel summarized six studies with nine coefficients ranging from .20 to .43 and a median of .38, while others found correlations with scholarships of .35, .39, .55, .58 and .69, and one junior high school study reported that the Otis test was the most useful of five. The test clearly has a substantial relationship with achievement, one which varies with the school, the teachers, and the pupils.

Correlation with other tests has also been tried. The Otis had correlations of more than .70 with Army Alpha, the CAVD, and other tests. Otis-Terman Group and Otis-Binet coefficients equal about .55 and .50, the Otis I.Q. being 6 to 8 points lower than that obtained on the 1916 Stanford-Binet. Otis I.Q.'s tend to differ from Binet I.Q.'s especially at the higher extreme. It is generally agreed that the use of the term I.Q. for converted Otis scores is not strictly justified. Otis pointed this out in his manual, but used the term I.Q. because it is the standard method of measuring brightness, cautioning users of the test always to specify "Otis I.Q."

TABLE II

Equivalent Scores on Some Tests of Intelligence

Otis Higher Raw Score	A.C.E., 1938 College Raw Score	1916 Binet Mental Age	Otis S.A. I.Q. (C.A.=17+6)	Otis General Population %ile	Otis College %ile	A.C.E. College Freshman %ile
75	176–198	19–6	144			
			143			
			142			
			141			
74	166–175	19–5	140			
			139			
			138			
			138			
73	157–165	19–4	137			
72		19–3	136			

TABLE II—*Continued*

Otis Higher Raw Score	A.C.E., 1938 College Raw Score	1916 Binet Mental Age	Otis S.A. I.Q. (C.A.=17+6)	Otis General Population %ile	Otis College %ile	A.C.E. College Freshman %ile
72	149–156	19–3	136			99
			135		99	
71		19–2	134		99	
71	141–148	19–2	133		99	98
			132		98	
70	137–140	19–0	131		98	97
69		18–11	130		98	
69		18–11	129	99	96	
69	131–136	18–11	128	99	94	95–96
68		18–9	127	98	92	
68	129–130	18–9	127	98	92	94
67		18–8	126	98	91	
67	125–128	18–8	125	98	89	92–93
66	122–124	18–6	124	98	87	90–91
65	121	18–5	123	97	84	
65		18–5	123	97	84	89
64	119–120	18–3	122	96	81	87–88
63	116–118	18–2	121	96	78	85–86
62	113–115	18–0	120	95	75	82–84
61	111–112	17–11	119	94	72	80–81
60		17–9	118	93	69	
60	107–110	17–9	118	93	69	74–79
59	106	17–8	117	92	66	73
58	104–105	17–6	116	91	63	70–72
57	103	17–5	115	90	60	69
56	101–102	17–3	114	88	58	66–68
55	98–100	17–2	113	86	55	62–65
54	96–97	17–0	112	84	52	59–61
53		16–10	111	82		
53	94–95	16–10	111		49	56–58
52	91–93	16–9	110	80	45	51–55
51	89–90	16–8	109	77	41	48–50
50	87–88	16–6	108	75	38	45–47
49		16–5	107	72	34	

TABLE II—*Continued*

Otis Higher Raw Score	A.C.E., 1938 College Raw Score	1916 Binet Mental Age	Otis S.A. I.Q. (C.A.=17+6)	Otis General Population %ile	Otis College %ile	A.C.E. College Freshman %ile
49	84–86	16–5	107	72	34	41–44
48	83	16–3	106	70	31	40
47	81–82	16–2	105	67	28	37–39
46	79–80	16–0	104	63	25	35–36
45	76–78	15–10	103	60	23	31–34
44	73–75	15–8	102	56	21	27–30
43		15–6	101	53	18	
43	71–72	15–6	101	53	18	25–26
42	69–70	15–4	100	50	16	22–24
41	66–68	15–2	99	45	14	19–21
40	64–65	15–0	98	43	13	17–18
39		14–10	97	40	11	
39	62–63	14–10	97	40	11	15–16
38	60–61	14–8	96	36	9	14
37	58–59	14–6	95	33	8	12–13
36	54–57	14–4	94	30	6	9–11
35		14–2	93	27	5	
35	51–53	14–2	93	27	5	7–8
34	50	14–0	92	25	5	6
33	49	13–10	91	22	4	6
32	47–48	13–7	90	20	4	5
31	45–46	13–5	89	18	3	5
30		13–3	88	16	2	
30	43–44	13–3	88	16	2	4
29	42	13–0	87	14	2	4
28	40–41	12–10	86	12	2	3
27	39	12–8	85	10	1	3
26	37–38	12–6	84	9	1	2
25		12–4	83	7	1	
25	35–36	12–4	83	7	1	2
24	33–34	12–2	82	6	1	2
23	31–32	12–0	81	5		1
22	29–30	11–10	80	5		1
21	28	11–7	79	4		1

TABLE II—*Continued*

Otis Higher Raw Score	A.C.E., 1938 College Raw Score	1916 Binet Mental Age	Otis S.A. I.Q. (C.A.=17+6)	Otis General Population %ile	Otis College %ile	A.C.E. College Freshman %ile
20	24–27	11–5	78	3		
19	21–23	11–3	77	3		
18		11–0	76	2		
18	19–20	11–0	76	2		
17	18	10–10	75	2		
16	17	10–8	74	1		
15	16	10–6	73	1		
14	15	10–4	72			
13	14	10–2	71			
12	12–13	10–0	70			

The validity of the Otis S.A. Test and its derivatives in vocational selection has been demonstrated with radio tube mounters (inferior workers had lower I.Q.'s), machine bookkeeping (r = .35, critical score = I.Q. 95), bank clerks (critical score = I.Q. 94), aircraft factory inspectors (r = .64), aircraft engine and propeller factory workers (improved selection by 16%), and supervisors in the same plant (improved selection by 15–20%).

In one large New York City department store the I.Q. ranges for the various job levels were found to be as follows:

TABLE III

Otis S.A. I.Q.'s by Job Levels in a Department Store

Job Level	Otis I.Q.
Labor	Below 60
Manual	60– 70
Semi-Skilled	70– 80
Low Clerical	80–100
Clerical	100–120
Skilled Clerical	120–133
Promotional	110–133

As is frequently the case in selection work, the validation studies are not all positive, due to the nature of the work, the criterion used, and other situational factors. In at least one study the Otis S.A. was of no value in clerical selection, and in another the Wonderlic had no significant relationship to success as an ordnance factory worker. It is suggestive that the Army Beta, a non-verbal test of mental ability, did have some validity in the last-named study.

As is true of most vocational tests, there is a dearth of data of a longitudinal type on the predictive value of the Otis in vocational *guidance* as contrasted with *selection.* One must rely on deduction from validation studies in selection programs, on ex-post-facto studies such as Fryer and Sparling's,[2] and on trained and cautious insights when interpreting test results for guidance purposes.

The American Council on Educational Psychological Examination

Each fall the American Council on Education publishes a new form of its Psychological Examination, a college freshman intelligence test used by some 300 colleges and universities. L. L. and T. G. Thurstone of the University of Chicago have been responsible for the technical work on the tests, and the constant revision of forms which are used each year with thousands of college and high school students has resulted in a superior series.

Applicability

Designed for entering college freshmen, and standardized on such groups, the test may also be used with high school seniors, but the two studies which have been made concerning changes in scores with increasing age have demonstrated a need for caution in making comparisons of high school students, older college students, or adults with the normative group. The fact that published norms are in terms of college freshmen has tended to limit the use of the tests to that group; Table II makes it possible to interpret results in more general terms.

Contents

Various editions of the test have included five or six sections such as sentence completion, artificial language, same-opposites (vocabulary), arithmetic reasoning, analogies (symbols, spatial), and number series, all grouped more recently into two parts to give a quantitative (mathematical and spatial) and a linguistic as well as a total score. The items are probably less affected by knowledge than those in most group tests, for the emphasis in selecting items was to choose those which test ability to manipulate given material rather than previously acquired facts. Thus in the artificial language test the subject is given a new vocabulary into which he must make translations, and in the analogies test he must pick out similarities and differences in unfamiliar symbols and forms. As these tests and items have been selected and modified from earlier tests and tried out over a period of nearly twenty years on large numbers of subjects, with adequate funds for research, they constitute an unusually valid and reliable instrument.

Administration and Scoring

Each sub-test is preceded by a practice exercise, and both are closely timed. Scoring is simple, machine-scoring methods being applied even in hand scoring.

Norms

Norms consist of percentiles for freshmen in three different types of colleges, a type of norm more helpful in the guidance of high school seniors planning further education than comparison with freshmen in colleges in general. It would be desirable for one counseling concerning the choice of a college to have norms for specific institutions, in order to choose one in which each student is most likely to succeed and to be satisfied. Unfortunately, the need to "safeguard" the reputation of an institution keeps such data from being published, although in the long run each college would probably gain if it did declare its interest as being in students of a certain mental level and in supplying a kind of education to that level. The Thurstones have not supplied I.Q. equivalents because of the artificiality of adult mental ages; such equivalents are given in Table II, however, and are helpful in interpretation.

Standardization and Initial Validation

New forms of the A.C.E. tests are constructed so as to resemble previous forms, differences being in details and innovations being gradual. Each new form is thus based on extensive previous work which has proved its validity; in addition, it is administered for tentative standardization to a thousand or more students who have also taken the preceding form. Finally, the scores of some 60,000 college freshmen who take the test each fall provide final norms. Correlational studies have been made to determine the academic predictive value of the examination and to establish its reliability. The assumption is usually made, however, that since the new edition is anchored to the preceding editions and has similar norms it will be approximately as reliable and valid as they.

Reliability

The reliability of the A.C.E. tests has been consistently high. One study reported odd-even reliabilities of .95 for the total score, and of .87 and .95 for the Q and L scores respectively, for the 1938 college edition.[5]

Validity

One indication of the validity of an intelligence test is the carefulness of its standardization. The care used in this series of tests, illustrated by subtest intercorrelations which range from .30 to .65 (median of .39), is thus one bit of evidence. The high reliability of part scores is another.

The A.C.E. test has frequently been correlated with other intelligence tests. With the 1916 Binet correlations of .45 and .67 have been reported. With the Otis S.A. Higher Form, coefficients of .78 and .82 have been found. The A.C.E. gave approximately the same percentile ranks in the senior year of high school as the Binet had previously in elementary school. Reported correlations with the Wechsler-Bellevue are .48 and .53; the two verbal scales are rather more closely correlated, but the performance and quantitative scales have less relationship—a fact needing further investigation and indicating a need for caution in using part scores, whether Wechsler-Bellevue or A.C.E.

One investigation converted A.C.E. scores to I.Q. equivalents and ascertained the median I.Q.'s of the freshmen in 323 colleges. These ranged from 126 in a private liberal arts college to 87 in a certain junior college. As has been shown in numerous earlier studies, there is a college for almost every I.Q. level: it is necessary only to choose the right one.

The relationship with achievement has been most intensively studied, academic prediction being the purpose of the test. Studies from various earlier editions yielded validity coefficients ranging from .44 to .60 for freshmen marks, and one correlation of .43 with four-year averages of 1052 students. Subsequent studies reported correlations of .17 to .81 with grades in various colleges, the mode being about .55. Correlations range from .27 to .62 with first semester grades with modes of about .45 for engineers and .50 for arts students. For grades over four years the correlations are about .40. At the University of Chicago correlations with introductory biology marks ranged from .43 to .47; humanities, .46 to .53; physical science, .39 to .46; social science, .46 to .51 (N = 200 to 2000). The correlation with marks for students of agriculture in another institution was .49; engineering, .45; general, .49. This appears contrary to the suggestion of some that the test should be more valid in liberal arts than in other colleges. A.C.E. scores have a correlation of .65 with the Cooperative Survey Test in Mathematics, Arithmetic Problems being .42, Plane Geometry .53, and Elementary Algebra .65; they have a correlation of .66 with the Nelson-Denny Reading Test. These are moderately high, the tendency being for them to exceed similar figures for most tests.

Part-scores have been related to achievement in specific subjects and fields by several investigators. Correlations were all lower for students of agriculture than the total score correlation cited above; for engineers, the Arithmetic Test gave a figure as high as the total score, .45; in the case of the general group, the Analogies Test was highest of all, .51, but not reliably higher than the total, .49. Segel and Gerberich[4] correlated part scores with marks in English, Foreign Languages, and Mathematics, with the results in the left-hand column of each pair in Table IV.

TABLE IV

Correlation Between A.C.E. Part-Scores and Achievement

	English		Foreign Languages		Mathematics	
A.C.E.	Marks	Test	Marks	Test	Marks	Test
Completion	.41	.44	.19	.55	.33	.31
Art. Lang.	.54	.65	.38	.75	.43	.38
Analogies	.38	.38	.25	.44	.31	.41
Arithmetic	.20	.28	.14	.38	.38	.62
Same-Opposites ..	.51	.52	.32	.70	.36	.35

In another study by the same authors part scores were correlated with Iowa Placement Test scores in the same subjects. The results appear in the right hand member of each pair of columns in Table IV. The discrepancies would be surprising were it not for the unreliability of marks. Patterns of ability and achievement do seem to exist, the verbal tests being more closely related to the verbal subjects, the quantitative (in one case) to the qualitative. Similar curricular relationships were later found at the University of Florida. This led to the use of Q and L scores in recent editions. Evidence which indicates a need for caution was published by the writer, to the effect that whereas the total scores on the A.C.E. test correlate .65 with the Cooperative Survey Test of Mathematics, both the Q and L scores correlate .56 with the same test, Q scores giving a prediction of achievement in mathematics in no way superior to that yielded by L scores. On the other hand, while the total score has a correlation of .66 with the Nelson-Denny Reading Test, that for Q is .37 and that for L is .80, indicating a genuine difference in Q and L scores. Similar results have been obtained by four other investigators. Part scores on tests such as this *may* measure constellations of primary abilities, as Thurstone[5] reports. These *may* be related to achievement in special fields as reported by some, but it is obvious that more conclusive evidence is needed before A.C.E. Q and L scores (or Wechsler-Bellevue verbal and performance scores) are relied on in differential prediction or counseling.

Studies of sex differences reveal negligible differences in total scores, masculine superiority in quantitative parts, and feminine superiority in linguistic parts. This checks with data on interests reported by workers with Strong's interest inventory.

It is to be regretted, in view of its excellent construction, widespread use and the extensive information on hand concerning it, that the A.C.E. test has not been adequately validated for vocational guidance and selection at the business and professional levels. The writer knows of no validation studies of this test using vocational criteria, although several studies have shown that it is related to success in some types of professional training, e.g., engineering, but not in teaching or nursing. Well-adjusted student teachers, and maladjusted students of average or low intelligence in one college tended to remain in training, whereas the bright but maladjusted students dropped out—perhaps because they recognized the misfit and saw other more appropriate opportunities. Ratings of success in practice teaching did not correlate significantly with A.C.E. scores.

This review of the A.C.E. Psychological Examination shows that it has been studied in most of the ways in which other tests have been tried, except in vocational adjustments. There is more material concerning its educational significance than there is for any other single test. It is a very reliable and valid test of scholastic aptitude or general intelligence at the college level. The test goes beyond this, however, in attempting to break down the concept of "general intelligence" by providing part-scores for what logical and statistical analysis indicate may be special aspects of intelligence. As Thurstone[5] has shown in a factor analysis of the 1938 edition, these aspects of intelligence are not primary abilities or factors, but constellations of related factors. This breakdown is thus a compromise attempt taking advantage of the findings of factor analysis and yet providing a practical measure for administrative use. It represents a step in advance in group testing without departing so far from proved techniques as to make it a purely research instrument.

The educational norms are perhaps the most adequate available. It is unfortunate that its vocational significance is not better established. However, the high correlation with other intelligence tests, together with the equivalent scores which have been made available, make it possible cautiously to use occupational and educational norms established for other tests. It should be remembered in so doing that Otis I.Q.'s are not the same as Binet I.Q.'s because of different methods of calculation, that I.Q.'s are artificial equivalents and not true ratios of mental to chronological age at older adolescent and adult levels, and that equivalent scores are based on averages and may therefore be distorted in extreme cases.

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D. E. S.

INTELLIGENCE TESTS, USE IN VOCATIONAL GUIDANCE. The administration of intelligence tests ordinarily is standard procedure in vocational guidance. However, it is certain that frequently maximum use is not made of them. Typically the interpretation of an individual's intelligence test score ends with an estimate of his general capabilities. Information of more specific reference is sought from occupational aptitude tests and tests of special abilities. While the value of these tests certainly is not to be denied it should be recognized that certain specific information also can be obtained from intelligence tests. We shall discuss briefly here some of the kinds of specific information which intelligence tests can give to the vocational counselor.

In general the problem set the counselor is to discover for each individual the type of occupation for which he is best fitted. The counselor, therefore, first of all must have information concerning the individual's potentiality to learn different jobs. Obviously if he is unable to perform satisfactorily in a course of training for a given occupation that occupation must be discarded as a possibility. But more important, if the individual has aptitude along certain lines but apparently is a slow learner, then advice can be given as to the type of vocational training that is necessary. Individual attention or at least permission for the student to progress at his own rate is indicated.

Having determined the ability of the individual to learn the basic skills the counselor then needs some index of the individual's potentiality to produce once he is on a job. It is clear that the employer will not be satisfied with an individual whose output is inadequate. Recommending an individual for a job on which he will be only a marginal worker will not lend for a satisfactory occupational adjustment.

Even though the evidence indicates an individual can learn a job and produce on it in an adequate manner, the matter of his probable happiness and satisfaction with the job is of utmost importance. Although it appears that productivity and job satisfaction are related, the relationship is far from perfect, indeed. The former certainly cannot be taken as an index of the latter. The counselor, therefore, must secure some notion of the probability that the individual will be satisfied with a particular job.

Finally, the counselor may need some indication of the individual's potentiality for promotion once he is placed on the job. This is true from the worker's point of view since promotion is potentially related to job satisfaction. It also is true from the employer's standpoint. In certain circumstances occupants of lower jobs compose a personnel pool from which personnel for higher jobs are selected. It could not be considered a satisfactory placement to recommend for such a job an individual who could do it successfully but stands little chance of being advanced.

It cannot be expected that the score on any single test can give answers to all of the above questions. However, intelligence tests can provide certain pertinent information and in addition can supply supporting evidence for information obtained from other sources. In the following paragraphs we shall see what kinds of answers to these four questions intelligence tests can give. Furthermore we shall consider the relationship between intelligence test scores and occupational level.

INTELLIGENCE TEST SCORES AS INDICATORS OF POTENTIALITY TO LEARN A JOB

Evidence systematically collected for three decades has indicated the usefulness of intelligence test scores in predicting grades in school. In general these coefficients are of the order of .50 and .60

for colleges and secondary schools respectively. So well are these relationships established that it is needless to present the results in detail here. For the topic at hand, however, the main consideration is not the prediction of general academic success so much as the prediction of success in trade and technical specialities.

A certain amount of attention has been devoted to the relationship between intelligence test scores and grades in such professional schools as medicine, law, and engineering. In general the coefficients of correlation are somewhat lower than .50. A coefficient of the order of .35 probably is descriptive. The situation, however, is complicated by a fairly marked restriction in the range of individual differences. Only rarely is an individual with an I.Q. of less than 110 found who is seeking entrance to a professional school. This restriction of range, therefore, somewhat obscures the true predictive effectiveness of intelligence test scores for professional training. A greater range presumably would bring about a higher validity coefficient. It may be concluded, therefore, that intelligence tests do satisfactorily predict success in formal training in the technical professions.

Training in the clerical occupations and mechanical trades is generally carried on in institutions of about the secondary school level. Again, while the evidence may not be considered wholly adequate, the indication is that the validity coefficients for such courses are lower than that for general success in secondary schools. The coefficients are approximately .50 and .40 for clerical courses and the mechanical trades respectively. While the relationship of intelligence test scores to success in the clerical courses is not unexpected due to the semi-academic nature of the subject matter, the significant correlation with grades in trade courses is less often recognized. The results presented in Figure 1 are illustrative. This figure summarizes the validity coefficients for an intelligence test in the prediction of grades in service training schools for thirty groups of students. The same intelligence test was used in all cases, and minimum scores were set for entry to training thus restricting the range of individual differences. It will be observed that for the clerical groups studied 10 per cent of the validity coefficients were between .40 and .59, 60 per cent were between .20 and .39, and 30 per cent were .19 or lower. For the mechanical groups 20 per cent of the validity coefficients were between .40 and .59, 40 per cent were between .20 and .39, and 40 per cent were .19 or lower. As far as formal school training in clerical and mechanical subjects is concerned it may be concluded that intelligence tests are useful as predictive devices.

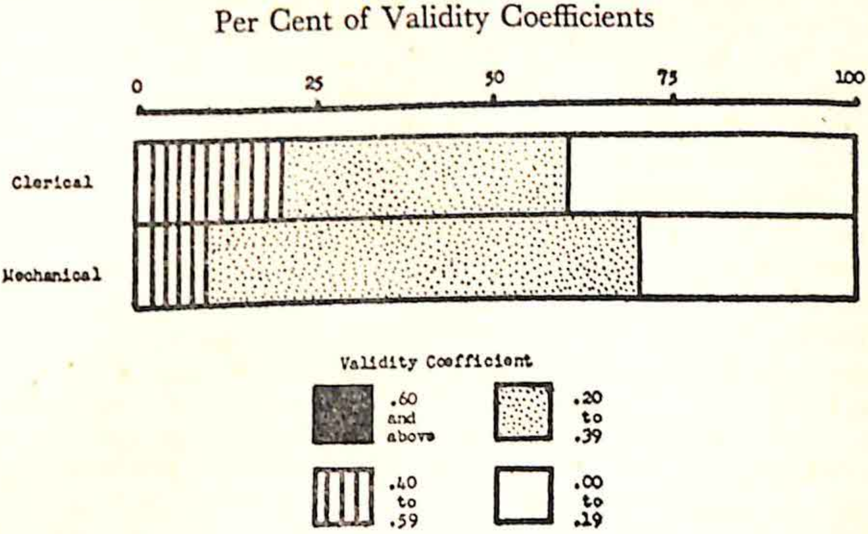

FIG. 1. Validity coefficients of an intelligence test for prediction of grades in clerical and mechanical training.

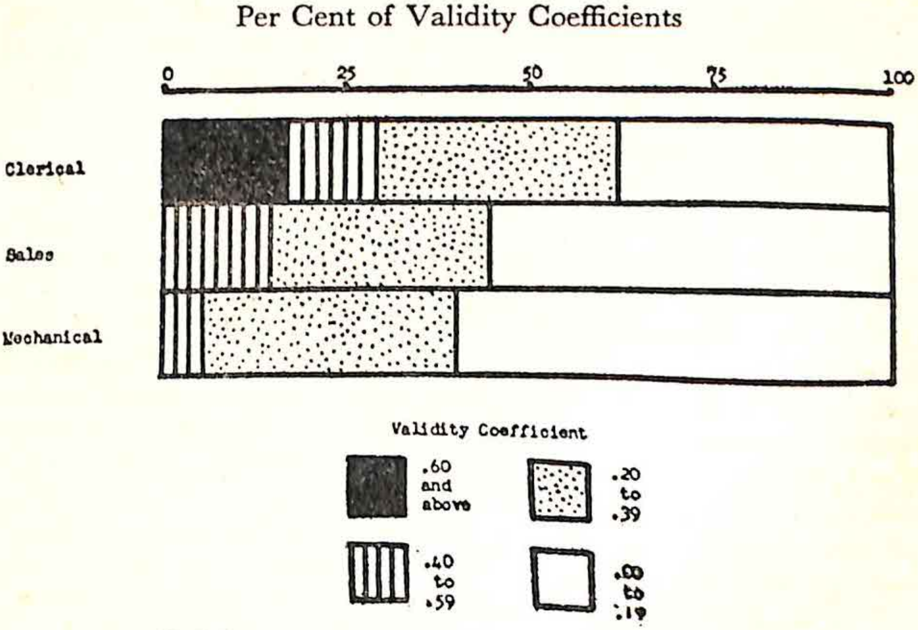

FIG. 2. Validity coefficients of intelligence tests for prediction of output on clerical, sales, and mechanical jobs.

The above results have been concerned with the effectiveness of the tests in predicting success in formal commercial and trade school training. What can be said about their usefulness in predicting success in on the job training? As far as the clerical occupations are concerned there is little or no information. However, in most cases where special skills are required the individual comes to the job with the necessary skills already acquired from formal school training. In the case of mechanical jobs a variety of circumstances exist. However, in the few cases that have been reported concerning the relationship between intelligence test scores and success in on the job training in the mechanical trades, as in apprentice training, the results appear to indicate that a validity coefficient of about .40 might reasonably be expected.

Intelligence Test Scores as Indicators of Potentiality to Produce on the Job

When one considered the high verbal content of intelligence tests and the abstract nature of the functions many suppose them to measure, it might be surprising if the scores they yield are related at all to the sheer amount of production on the job. However, the indication is that a relationship does exist. Numerous studies have been made of this relationship for a wide variety of jobs. The results of these studies suggest validity coefficients of intelligence test scores for output to be of the order of .35 for clerical jobs, .25 for sales jobs, and .15 for mechanical jobs.

Figure 2 summarizes the validity coefficients reported in a number of different studies. Eighty-four different groups of employed workers are involved. In all cases success on the job was measured directly in terms of output or supervisors ratings of productivity. A variety of different intelligence tests were used. Since the cases employed in these studies were only those workers productive enough to be retained on the job, the validity coefficients are lowered somewhat due to a restriction in the range of individual differences. The results presented in Figure 2 show that intelligence test scores are predictive to a fairly satisfactory degree of output in clerical jobs, less satisfactory for sales jobs, and are of little use for prediction in mechanical jobs. For the clerical jobs 39 per cent of the validity coefficients were .40 or above and 38 per cent were .19 or less; for the sales jobs 15 per cent of the validity coefficients were .40 or above and 55 per cent were .19 or less; and for the mechanical jobs none of the validity coefficients were greater than .39 and 59 per cent were .19 or below.

INTELLIGENCE TEST SCORES AS INDICATORS OF THE DEGREE OF SATISFACTION THE INDIVIDUAL WILL HAVE WITH THE JOB

Probably the most difficult aspect of occupational success to measure is the degree of satisfaction the worker derives from the job. Numerous studies have been made of this subject employing a variety of devices for measuring satisfaction. Perhaps the simplest index of satisfaction is whether the worker stays on the job or leaves it. To be sure workers leave jobs for a variety of reasons other than satisfaction and stay on jobs even though they may dislike the work. However, labor turnover can be taken at least as a rough index of the extent of job satisfaction. Some persons leave a job because it is too difficult for them while others leave because it does not permit adequate opportunities for their capabilities. But in either case it can be said that the job in question did not satisfy the individual.

Figure 3 shows the relationship found in one study between labor turnover and intelligence test score in relation to difficulty of the job. It is apparent that for those with high scores labor turnover

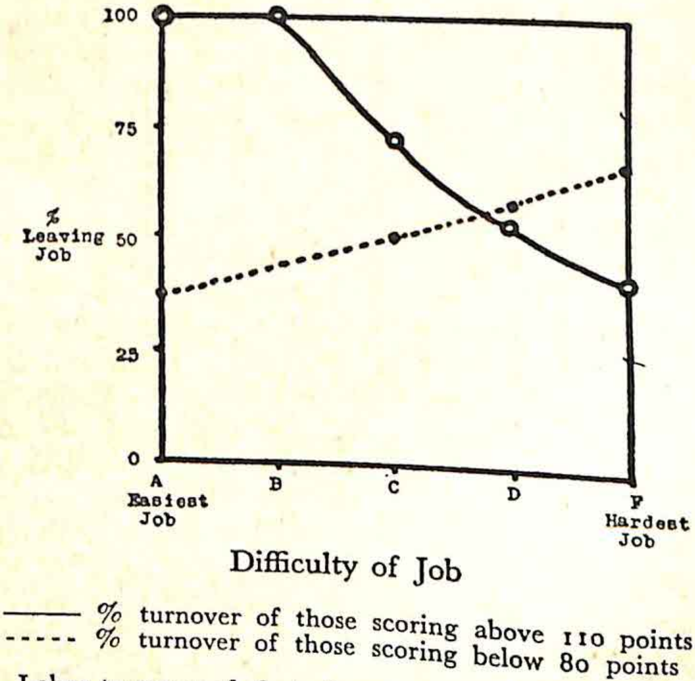

FIG. 3. Labor turnover of clerical workers earning high scores and those earning low scores on an intelligence test in relation to a difficulty of job. After Bills, M. A. Relation of mental alertness test scores to positions and permanency in company. *J. Appl. Psychol.*, 1923, 7, 154–156.

is far greater on jobs that are termed easier than on those which are termed harder. For those earning low scores on the test the trend is in the opposite direction. The conclusion may be drawn that insofar as labor turnover reflects satisfaction with the job, with complex jobs persons with high intelligence test scores will be more satisfied than persons with low intelligence test scores, while the reverse is true with the simpler jobs.

INTELLIGENCE TEST SCORES AS INDICATORS OF POTENTIALITY FOR PROMOTION

Figure 4 shows the relationship between the intelligence test scores of some 300 clerical workers obtained at the time they were hired and how high a job they achieved some time later. It is apparent from this figure that those individuals who earned low scores on the intelligence test tended to remain in the lower jobs while those with high scores tended to be promoted to higher jobs. It is clear, there-

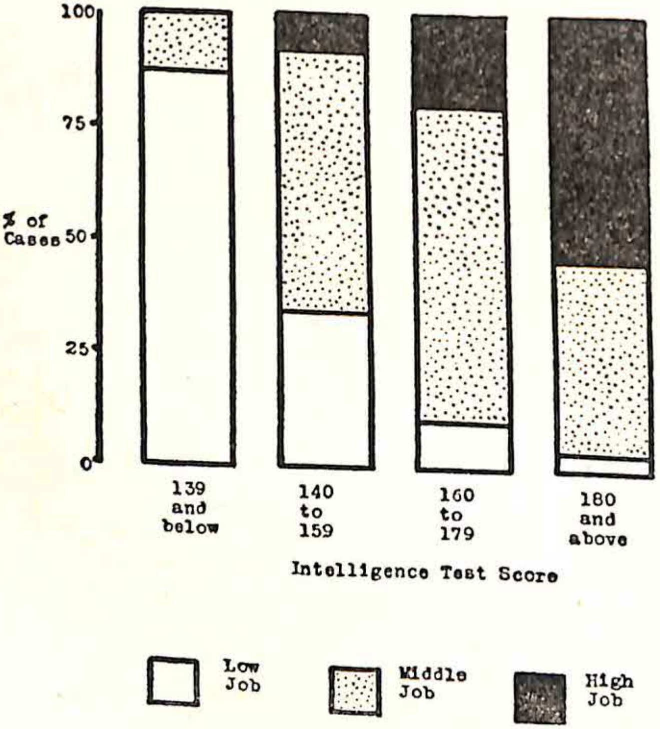

FIG. 4. Relationship between intelligence test scores of clerical workers at the time they were hired and job level achieved some time later.

After Pond, M., and Bills, M. A. Intelligence and clerical jobs: two studies of relation of test scores to job held. *Person. J.*, 1933, 12, 41–56.

fore, that intelligence test scores can be used to measure the individual's potentiality for promotion in clerical jobs.

THE HIERARCHY OF OCCUPATIONS IN RELATION TO INTELLIGENCE TEST SCORES

In the ordering of occupations it is the custom to place the professions at the top of the list followed by the managerial and supervisory jobs, the clerical jobs, and the sales jobs, with the manual and mechanical jobs at the bottom and arranged in order of skilled, semi-skilled, and unskilled. It is presumed that this order is based upon the complexity of the tasks involved in the different occupations and basic mental requirements. This order also is thought of as an order in terms of desirability or goodness. Thus one speaks of going up or down the occupational scale. By implication anyone who performs adequately in a job at a given level can also perform all jobs at lower levels. We shall evaluate this concept later, but let us for the moment examine this occupational hierarchy in relation to intelligence test scores.

Numerous studies have been made of the relationship between occupational level and intelligence test scores. Typical of the findings of such studies is the early study of the Army Alpha test scores of soldiers in World War I in relation to their civilian occupations. The results are shown in Table I, the scores being given as percentile scores in terms of the total population. It can be seen from this table that as one descends the occupational scale there is a progressive decrease in average intelligence test score. To be sure there is considerable variation in the scores of persons employed in the same occupation but it is unmistakably true that the scores of persons in the superior occupations are generally high while those in the inferior occupations are generally low. The consistency of this relationship is evidenced by the fact that the rank order correlation between the average scores by occupations in the Army study and the average score by occupation in a study made more than twenty years later and employing a different intelligence test is .90.

What is the basis of this relationship? Can it be ascribed to general intellectual requirements? In any event how is the relationship to be interpreted? In Table II are given the median percentile scores of some 700 employed men on four very simple paper and pencil tests. The percentile scores are based on general population norms. It is noteworthy that the time limit for each of these tests was half a minute. Approximately the same relationship between occupational level and test scores holds with these simple tests as holds with intelligence tests. For several specialized aptitude tests there is some indication that the relationship also obtains. It is apparent, therefore, that scores on tests other than intelligence tests will give the same ordering of occupations. Since the correlations between intelligence tests and scores on specialized aptitude tests are far from perfect it may be said that whatever determines the order of occupations is not general intellectual ability alone. Certainly the correlations between intelligence test scores and scores on the tests cited in Table II will not be greatly different from zero.

Let us see now what explanations can be given for the relationship between intelligence test scores and occupational level. It was pointed out above that the common point of view holds that the ordering of jobs is based primarily upon the complexity of the tasks involved. The complexity of the tasks that an individual can perform is considered to be a direct function of his general intellectual ability. Consequently, an individual of a given intellectual level can perform all jobs whose complexity requires that intellectual level, and all simpler jobs since their requirements are less. He could not, however, satisfactorily perform any jobs at higher levels.

Reference to Table I shows that for any given job the range of scores for persons holding it is considerable. Thus while the average score of telegraphers was better than the scores of 70 per cent of the total population, one quarter of the telegraphers had scores below the 46th percentile. Since the quarter of the telegraphers with the lowest scores were actively engaged in their occupation it may be presumed that whatever the minimum intellectual requirements for the job of telegrapher might be it is certainly quite low. With the exception of the very highest occupations this appears to be generally true.

In general, studies of low intellectual groups support the notion that the minimum intellectual levels below which various jobs cannot be performed at all is quite low. Typical findings are given in Table III. It is apparent from this table that even quite low persons, in terms of intelligence test scores, may perform certain jobs in an adequate manner. The minimum intellectual requirements for most jobs, at least as measured by intelligence tests, therefore are very low, indeed. Since the proportion of people in the general population falling below these minimum levels is very small such requirements would seem to be quite an unimportant problem in vocational guidance. Consequently, it can be concluded that minimum general intellectual requirements are only a very small factor in determining the relationship between intelligence test scores and occupational level. It is also to be noted that in terms of a coefficient of correlation the magnitude of the correlation between occupational level and intelligence test scores for such data as are presented in Table I is of the order of only .60. This correlation while sizable certainly is not perfect.

How is the relationship between intelligence test scores and occupational level to be explained, then? We have seen earlier that persons with high intelligence test scores tend to leave the lower jobs and those with low scores tend to leave the higher jobs. The relationships we reviewed between intelligence test scores and ability to learn and produce on different jobs, satisfaction, and promotion obviously contribute part. Furthermore, there is some evidence that the test scores of persons applying for a given job are rather limited in range. In other words there is some differential selection of applicants for different jobs. It is probable that this selection is to be accounted for to a considerable extent on educability and amount of formal education which in turn are related to intelligence test scores. While it cannot be denied that general intellectual ability plays some part its rôle is definitely of minor importance.

Perhaps it will be well to consider further the notion that an individual of a given intellectual level can perform any jobs which require that degree of intellectual ability and *all* lower jobs. It should be remembered that an individual can be considered a successful worker only if he continues to produce over a long period of time. While a person with a high intelligence test score might be able to wrap packages, wind coils, or roll steel as well as one with a lower test score for a day, a week, or even a month, the probability that he can continue to perform the task for as long as a year is very small. Studies in industrial psychology have shown a substantial relationship between susceptibility to monotony and intelligence test scores. But whatever the causes, boredom or not, the fact remains that the high scoring individual is not a good risk for a lower job since he cannot successfully keep at it. The notion that he is too good for such work helps not a whit—the fact remains that he does not have the capacity to do the job.

It is apparent from the foregoing discussion that an individual's intelligence test score does give some information relative to his optimal occupational group. It is likely that with jobs above or below his intellectual level the probability of success is smaller. It seems likely that this relationship is only to a small degree due to general intellectual ability. Rather it is due more to a variety of factors such as educability, interests, and the like.

CONCLUSIONS

This review has attempted to point out certain uses for intelligence tests in vocational guidance. First of all an individual's score will give him a general indication of the occupational area that seems most promising for him. The score will tell something of his ability to acquire the basic skills and knowledge required. It will give some information concerning his ability to produce on clerical jobs, and might be used as supporting evidence of his ability to produce on sales jobs, and the probability that he will be satisfied with his job.

TABLE I

SCORES ON AN INTELLIGENCE TEST IN RELATION TO OCCUPATION

	Percentile Score		
	Median	Q_1	Q_3
Engineer	98	83	99
Accountant	93	80	96
Physician	90	82	98
Teacher	88	76	95
Chemist	87	75	93
Draftsman	87	69	93
Executive	83	66	93
Bookkeeper	78	63	90
Clerk	76	60	88
Photographer	70	48	82
Telegrapher	70	46	83
Musician	67	46	82
Electrician	66	46	83
Stock Clerk	66	45	81
Druggist	64	50	81
Locomotive Engineer	60	42	72
Policeman	56	35	72
Toolmaker	55	39	73
Plumber	54	33	71
Lathe Hand	53	33	73
Chauffeur	53	32	73
Tailor	53	32	72
Lineman	52	32	71
Butcher	50	29	70

TABLE I—*Continued*

	Percentile Score		
	Median	Q_1	Q_3
Printer	49	24	74
Blacksmith	48	28	68
Painter	48	27	66
Bricklayer	47	26	67
Cobbler	45	27	62
Barber	44	23	64
Sales Clerk	41	27	76
Boiler Maker	40	20	60
Teamster	39	19	59
Miner	38	29	58
Mason	29	8	49
Shoemaker	24	8	46
Lumberman	24	7	51
Structural Steel Worker	20	9	51
Cook	16	7	46
Textile Worker	14	7	49
Sheet Metal Worker	11	6	35
Laborer	10	5	36
Fisherman	9	6	49

After, Bingham, W. V. Aptitudes and Aptitude Testing. Harpers: 1937.

TABLE II

SCORES ON FOUR SIMPLE TESTS IN RELATION TO OCCUPATION OF EMPLOYED WORKERS

		Median Percentile Score			
	N	Symbol-Letter Substitution	Number Finding	Dotting	Tapping
Professional	243	72.0	66.8	59.7	68.5
Managerial	40	46.8	44.0	53.1	52.1
Clerical	101	63.6	61.7	55.5	70.2
Sales	75	61.5	58.2	49.6	56.9
Skilled	144	46.1	46.8	49.1	54.0
Semiskilled	59	46.8	46.0	41.0	43.0
Unskilled	35	29.1	36.3	30.0	36.6

TABLE III

MINIMUM MENTAL AGES FOR SEVERAL JOBS

Mental Age	Boys	Girls
5 years	Wash dishes Feed and fold from a mangle	Follow a pattern in simple sewing Pare vegetables
6 "	Mix cement Handle freight	Crochet open mesh Operate a mangle
7 "	Rough painting Simple shoe repairing	Cross stitch Hand ironing
8 "	Cut hair and shave Garden work	Operate scarf loom Make dresses cut by others
9 "	Foot power printing press Mattress and pillow making	Fancy basket making Plain cooking
10 "	Sign painting Shellacking and varnishing	Operate sweater machine Fancy laundry work
11 "	Green house attendant Store keeping	Simple library work Power sealing in canning plant

After Beckman, A. S. Minimum intelligence levels for several occupations. Person. J., 1930, 9, 303–313.

E. E. G.

INTEREST TESTS

California Occupational Interest Inventory. The major purpose of the *Occupational Interest Inventory,* devised by Edwin A. Lee, and Louis P. Thorpe, is to aid in discovering the basic occupational interests possessed by an individual in order that he may become or remain an interested, well-adjusted, and effective person, as well as a profitable employee or competent student. Once this discovery has been made, a number of specific and often related callings are usually disclosed to the individual for further consideration. The choice of a particular occupation may then be approached on the basis of such factors as his personality qualities, his abilities, his skills, his health, and existing opportunities for training and employment.

The *Inventory* is available in both an Intermediate Form and an Advanced Form. Its special features include:

1. Three Occupational Dimensions. In addition to ascertaining the individual's (1) general *field* of occupational interests, the inventory determines as well his (2) *types* of interests—whether they are primarily verbal, manipulative, or computational—and (3) his *level* of interests—the extent to which simple or more complex activities are chosen.
2. A Diagnostic Profile. The three dimensions of occupational interest measured are shown graphically for each individual on the front page of the test booklet.
3. Dictionary of Occupations. The occupational descriptions in the inventory items are based on vocational classifications and job-analyses presented in the *Dictionary of Occupational Titles* issued by the United States Employment Service.
4. Junior-Senior High School—Adult Sequence. By providing both an Intermediate and Advanced Series, the *Occupational Interest Inventory* makes possible the determination of occupational interests from the junior high school level through the senior high school and into adulthood. Such a sequence makes possible guidance and curriculum planning for younger pupils as well as older persons.
5. Simplicity of Administration and Scoring. Unlike most vocational interest instruments the *Occupational Interest Inventory* is economical of both time and effort. The Inventory can be given in 30–40 minutes and scored in six or eight minutes.
6. Suggested Supplementary Data. For the benefit of counselors and other guidance workers, types of supplementary test data needed for determining vocational selection are suggested. This plan is in harmony with modern guidance techniques.

The reliability of the Advanced series of the *Inventory* was determined by a repetition of the test to 100 twelfth-grade students, the number of boys and girls being approximately equal. The re-tests were given after an interval of four weeks to a group of students who had not seen the results of the first inventory. The coefficients of reliability thus obtained, and the means (averages) of the original and re-test scores, are presented below. The Intermediate Series has equally satisfactory coefficients of reliability.

RELIABILITY COEFFICIENTS FOR ADVANCED SERIES

		Mean Scores	
Fields of Interests	r	First	Retest
A. Personal-Social	.88	20.9	20.4
B. Natural	.91	15.7	15.4
C. Mechanical	.90	18.4	18.8
D. Business	.93	23.6	23.6
E. The Arts	.91	22.2	22.5
F. The Sciences	.89	22.1	22.2
Types of Interests			
1. Verbal	.88	12.8	12.5
2. Manipulative	.91	14.8	15.5
3. Computational	.93	10.9	10.8
Level of Interests	.88	67.4	66.7

There are no purely objective criteria for establishing the validity of an occupational interest inventory. The halo effects associated with occupational titles often play havoc with intercorrelations among them. As a result, what appears to be a genuine interest (but based upon an inadequate knowledge of the specific activities involved in a given occupation) often evaporates when the tasks, activities, advantages, and limitations of the occupation are understood. Even reactions to activities themselves do not entirely escape these disturbing influences.

However, certain factors may add or detract from the validity of occupational inventories, depending upon how they are utilized in developing such instruments. Among the factors or criteria observed in the *Occupational Interest Inventory*, are the following:

1. The careful selection of items. (Dictionary of Occupational Titles.)
2. The use of descriptive items.
3. The balancing of the items on levels as well as fields of interest.
4. The presentation of paired-choice items.

Percentile norms based on more than one thousand cases are provided for both the Intermediate and the Advanced Series. The groups tested were so selected as to provide a sampling of the typical population. These percentile norms make it possible to compare a given individual's responses with those of others in this group, either by sex or by composite population.

It is suggested that the separate sex norms be used when it is desired to compare a given individual's interests with those of his or her own sex. This procedure would ordinarily be followed in individual counseling and in general educational and vocational guidance. When the *Inventory* is being used for the selection and placement of employees in business and industry, the "composite population" norms should ordinarily be used.

A special machine-scoring answer sheet is available for those desiring to score the *Inventory* with I.B.M. equipment.

This *Inventory* is published by the California Test Bureau, Los Angeles 28, California.

L. P. T.

Cleeton Vocational Interest Inventory. This inventory, developed by Glen U. Cleeton, is a self-scoring device for the classification of vocational interests into ten general categories. Since vocational interests of men and women are distinctly different, two forms of the inventory are provided: one for men, and one for women.

The categories into which scores may be classified for men are as follows:

1. Interests similar to physician and other occupations related to biological sciences.
2. Interests similar to life insurance salesman, real estate salesman, and other specialized selling fields.
3. Interests similar to engineer, technologist, chemist, mathematician, and other occupations related to physical sciences.
4. Interests similar to teacher, minister, social worker, and other occupations related to the social sciences.
5. Interests similar to purchasing agent, business manager, clerk, and other occupations related to business administration.
6. Interests similar to lawyer, journalist, and other legal and literary occupations.
7. Interests similar to skilled workers in mechanical occupations.
8. Interests similar to accountant, statistician, banker, broker, and other occupations related to finance.
9. Interests similar to actor, musician, artist, and other creative and public performance occupations.
10. Interests similar to farmer, dairyman, nurseryman, and other agricultural occupations.

The categories into which scores may be classified for women are as follows:

3. ———. Relationships between constancy of expressed preferences and certain other factors. Jour. Educ. Psych., 1936, 27, 521–526.
4. Sharkey, V. J. and Dunlap, J. W. Study of the reliability of the Academic Preference Blank. Jour. Educ. Psych., 1940, 31, 103–110.

J. W. D.

Garretson-Symonds Interest Questionnaire for High School Students. This questionnaire, constructed by Oliver K. Garretson and Percival M. Symonds, is designed to measure the relative strengths of a boy's interests in academic, commercial, and technical high school curricula. It is best used with eighth- and ninth-grade boys as one element in a guidance program leading to the selection of one of these types of secondary-school curricula. The results should be of value to the boy, his parents, or his counselor.

The 1942 edition of the questionnaire contains sections on occupations, activities, school subjects, job activities, positions on the school paper, positions on the football team, positions in student activities, prominent men, things to own, and magazines, each section containing numerous items. The student is asked to indicate whether he likes, dislikes, or is indifferent to each item. The entire questionnaire is printed on the two sides of a single IBM answer sheet to facilitate scoring either by hand or by machine.

The questionnaire was standardized by administration of a preliminary form to boys in three New York high schools offering different types of curricula. An item analysis was made of the papers of the 150 boys with highest school records in each school. An item was selected as being significant for a particular curriculum when there was a difference not less than twice as great as its own standard error in the percentage of pupils in that curriculum answering the item in a certain way as compared with students in the other curricula. The scoring keys thus obtained have been checked by study of results in three other cities.

Decile norms for each of the three preference scores are provided by the authors. These norms are based on records of 800 ninth-grade boys in three city school systems.

An extensive study (3), in which this questionnaire was used in connection with standardized intelligence and aptitude tests and school marks, found little relationship between expressed interest in a field, and ability in that field as measured by standardized aptitude tests, or between interest and scholastic success in the chosen curriculum. The author concludes that interest questionnaires may be used with a high degree of accuracy to predict which curriculum a boy will choose (p. 38), but that there is very little relationship between the direction that a boy's interest will take and his ability, either as measured by aptitude tests or by school marks (p. 52).

Reliability, computed by correlation of the odd and even items for 75 cases, is reported as .861 for the measure of academic preference, .925 for the measure of commercial preference, and .953 for the measure of technical preference.

No time limit is given, but it is stated[4] that about 30 minutes will be required for most students to complete the blank.

For hand scoring, six stencils are used, one for each side of the blank for each of the three scores. Significant items for each score are weighted + or —. It is necessary to tally the algebraic total of plus and minus credits on each of the six stencils. Exceedingly careful scoring and cautious rechecking will be essential to accurate scoring.

The questionnaire is published by the Bureau of Publications, Teachers College, Columbia University.

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2. Garretson, O. K. and Symonds, P. M. *Interest questionnaire for high school students: manual of directions, 1942 edition.* New York: Bureau of Publications, Teachers College, Columbia University, 1942.
3. Symonds, P. M. *Tests and interest questionnaires in the guidance of high-school boys.* New York: Bureau of Publications, Teachers College, Columbia University, 1930.
4. ———. *Psychological diagnosis in social adjustment.* New York: American Book Co., 1934.

F. A. M.

Interest Check List. This Check List was constructed by members of the staff of the Occupational Analysis and Industrial Services Division of the United States Employment Service. It is an interviewing aid to be used when a counselor feels that further information on a counselee's interests is desired. It is particularly useful with persons who have no definite stated work interest and with those whose knowledge of the wide variety of tasks and activities which exist in the various occupational fields is limited.

The items in the Interest Check List are based on the groupings of jobs as found in the *Dictionary of Occupational Titles, Part IV*. This Dictionary groups thousands of jobs found in American business and industry into a relatively small number of fields of work

1. Interests similar to clerk, stenographer, typist, and other office work occupations.
2. Interests similar to retail store sales clerk and other selling occupations.
3. Interests similar to nurse, bacteriologist, and other occupations related to the natural sciences.
4. Interests similar to social worker, vocational counselor, secretary, lawyer, and other social service professions.
5. Interests similar to artist, writer, designer, composer, and other creative occupations.
6. Interests similar to grade school teacher and related occupations.
7. Interests similar to high school or college teacher and related occupations.
8. Interests similar to manicurist, beauty service operator, actress, dancer, singer, and other performance and personal service occupations.
9. Interests similar to housekeeper, factory worker, and other mechanical and household occupations.
10. Interests similar to wife, homemaker, household economist, child care specialist, and similar domestic interest fields.

The scores on these inventories may be used as points of reference in vocational and educational counseling along with other evidence relating to education, experience, and aptitude and intelligence test scores. The philosophy of guidance underlying interest measurement rests on the principle that counseling should be the beginning of a continuous process of personal, educational, and vocational adjustment. Interests are not, in themselves, a measure of the abilities required for successful occupational performance. It is true, however, that the possession of a background of attitudes similar to those possessed by persons engaged in a given occupation will aid any person entering that occupation in making a satisfactory adjustment. Interest tests scores are an excellent starting point in providing vocational guidance.

Tables of standards based on 12,415 cases for the men's form and 11,184 cases for women's form are provided for educational levels ranging from eighth grade pupils to college graduates. Both percentile and letter rating norms are provided. A case analysis procedure is outlined in the manual of instructions. Forms for recording scores, constructing an interest profile, and for recording the results of guidance interviews are provided in the test booklet. A thorough discussion of the interests inventory technique, suggestions on guidance procedures, and complete instructions for using the inventories are included in the Manual of Directions.

Reliability coefficients of internal consistency, determined by correlating odd versus even items for groups of 150 to 1,000, range from .822 to .910. Reliability measured by constancy of responses on a second administration of the test within one month provided 93·9% identical responses.

Validity of interest scales is difficult to establish because of the absence of suitable criteria. In the research leading to the compilation of the inventories the basis used in selecting items was the extent to which people in different occupations report interest in specific items. An analysis of inventory scores of 1,741 persons, successfully engaged in standard occupations, showed that the highest inventory rating agreed with the occupation being followed in 78% of the cases; 83% rated either first or second on the inventory scale corresponding to their occupation; and 95% rated first, second, or third on the corresponding scale.

The inventory is published by McKnight and McKnight, Bloomington, Illinois.

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G. U. C.

Dunlap Academic Preference Blank. In guidance it is necessary to have an extensive knowledge of the individual, including such factors as his intelligence, achievement, social background, ability to work with others, and his interests or preferences. The Academic Preference Blank developed by Jack W. Dunlap provides indirect measures of the subject's interests as related to subject matter fields in the sixth, seventh, eighth, and ninth grades and an index of the individual's mental capacity. These measures have been found to correlate highly with achievement in the various subjects and thus have considerable value for guidance purposes. The blank can be used as an index of group achievement in the several subject-matter fields.

Each of the two forms of the Blank contains 90 items and each Form can be scored differentially for the following areas: literatures, geography, word meaning, paragraph meaning, language usage, arithmetic, history, general achievement, mental ability, and intellectual alertness. The subject indicates his attitude towards each of the items by marking one of the following: L for Like, I for Indifferent, D for Dislike, or U for Unknown. The Blanks are designed for machine scoring, but can be scored manually. Administration of the Blank requires approximately ten minutes testing time.

The Blank was standardized on several groups of students from each of the grades 6–9 inclusive. Each item was submitted to intensive statistical analysis to determine its validity for each of the ten areas, and extensive studies were carried out to determine the validity and reliability of each area as a whole. Approximately 180,000 bi-serial correlations were computed during the validation and cross validation of the items. Finally, the 180 items employed in the two forms were carefully selected from a pool of over 1,000 items in terms of consistency of response by students. Studies of student constancy revealed that students were highly consistent in their responses even when a year elapsed between the two administrations of the Blank.

The reliability of the instrument was determined by the alternate form technique for each grade, six through nine, and also by the test-retest method for grades seven and eight. The median reliabilities for grades six to nine are: .83, .80, .75, and .70. The median test-retest reliabilities were .82 for Form A and .90 for Form B.

Validity coefficients were determined by correlating the area scores on the Blank with the corresponding sub-test scores on the Metropolitan Achievement Test and on the New Stanford Achievement Test for each grade. In order to emphasize the predictive value of the Blank it was administered six months before the achievement tests. The validity coefficients ranged from .28 to .72 with a median value of .52. Validity coefficients for mental age and intellectual alertness were computed against the Terman Group Test for Mental Ability and these ranged from .40 to .80 with a median of .62. That the Blank is not a disguised intelligence test was shown by a study in which individuals were matched as to intelligence but differed greatly as to achievement. Differences corresponding to the differences in achievement were found in the preference scores.

The Academic Preference Blank has substantial reliability for each of the ten areas for grades six to nine inclusive. The validity of the Blank is sufficient to warrant its use when a survey of a group is desired. Evidence indicates the Blank is partially saturated with intelligence, and in addition it is measuring another factor contributing to achievement. Users of the Blank in field situations report that it has been of material assistance in problems of guidance and adjustment. The Blank is published by the World Book Company, Yonkers, New York.

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on the basis of relationships between jobs. The Dictionary codes are indicated in the Interest Check List for each group of items, so that it is possible to consult the Dictionary to find the lists of jobs to which a checked interest may apply. The Check List contains about 135 items relating to eight major fields of work, as follows: artistic work; musical work; literary work; entertainment work; clerical and sales work; service work; agriculture, marine, and forestry work; and mechanical work.

The directions for administration are self-explanatory. There is no time limit, but very few persons require more than thirty minutes; the average time is about fifteen minutes. It is suitable for use with either sex. The Check List calls for the person's indication of his interests by placing check marks in front of those activities which he would like as jobs or hobbies whether or not he has ever done them.

There is no score to be obtained from the Interest Check List and it should not be interpreted mechanically. The counselor reviews the Check List to determine where the check marks are concentrated. This serves as a starting point from which the counselee and counselor investigate together the wide variety of occupational possibilities suggested by the various activities. The counselor discusses the checked activities with the counselee to be certain that a true vocational interest is indicated and that the interest is not based altogether on factors such as pay rates or cleanliness of job. The counselor determines whether the counselee has had actual work experience, leisure time activities, schooling, or hearsay information bearing upon the activity and whether he is interested in investigating the job possibilities for that activity. The counselor narrows down the counselee's interests to two or three groups or even one group if possible. He then consults the *Dictionary of Occupational Titles, Part IV,* to determine the kinds of jobs related to a counselee's checked interests. This serves as a starting point for the consideration of aptitudes, financial status, past work experience, and all other pertinent factors.

The publisher of this Check List is the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

References:

1. Division of Occupational Analysis, War Manpower Commission. Dictionary of Occupational Titles, Part IV, Entry Occupational Classification, Revised Edition, October 1944, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

B. J. D.

Kuder Preference Record. *The Preference Record* is intended for use in (1) pointing out vocations with which a person may not be familiar but which involve activities of the type for which he has expressed preference, and (2) checking on whether a person's choice of an occupation is consistent with the type of thing he ordinarily prefers to do. It is also intended for employee counseling, particularly in improving the placement of employees.

Scores are obtained in nine areas: (1) mechanical, (2) computational, (3) scientific, (4) persuasive, (5) artistic, (6) literary, (7) musical, (8) social service, and (9) clerical. The mean profiles of groups of people in various occupations have been obtained and are presented in the manual.

The form consists of 168 items. Each item consists of short descriptions of three activities. The respondent is asked to indicate which of the three activities he would ordinarily like *most* and which he would ordinarily like *least*. Reliabilities obtained from various groups from eighth graders to adults range from .80 to .98, with a median of .91.

With respect to the validity of the scales, evidence is reported in the manual concerning the relation of scores to (1) occupation entered, (2) choice of curricula and occupations, (3) achievement, (4) general and special abilities, and (5) job satisfaction. In almost all the occupations studied, significant differences from the base group have been found on one or more scales.

The publisher of *The Preference Record* is Science Research Associates, 228 South Wabash Avenue, Chicago 4, Illinois.

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G. F. K.

Manson Occupational Interest Blank for Women. This inventory, constructed by Grace E. Manson purports to measure occupational interests of women. It consists of a list of 160 occupations after each of which are five symbols: L!, 1, ?, d and D. The subject is asked to cross out L! or 1 indicating liking for the work, ? indicating indifference or lack of information and d or D indicating dislike for the work. In filling in the blank the subject is instructed to "disregard any salary or social difference or any possible family objections" and to "consider only your interest and satisfaction in doing each of the kinds of work listed." In addition, the subject is asked to view each occupation from the standpoint of liking it regardless of whether or not she has the ability for it.

The scores obtained enable the counsellor to ascertain the similarity between the occupational interests of the subject and those characteristic of women in ten occupations. They are suggestive in determining what types of work the subject is likely to enjoy. Moreover, they are useful in an exploratory counselling interview and for stimulating curiosity and interest in regard to occupations. However, Berman, Darley and Paterson, at the Minnesota Employment Stabilization Research Institute found it less discriminating than the Strong Blank for Men.[1] Laleger administered both the Strong Vocational Interest Blank for Women and the Manson Occupational Interest Blank to 703 high school girls. Although both inventories were found to be statistically reliable, the correlations between them were generally low. Laleger found that the interest pattern of any occupation as determined on the Manson Blank is in general almost uncorrelated with the interest pattern of a similar occupation as determined on the Strong Blank.[2]

The blank is self administering and the directions are printed on each copy. There is no time limit. It is inadvisable to use the blank with girls less than 17 or 18 years of age for the significance of the scores cannot be relied upon. Scoring keys are given for the following occupations: Private Secretary, Office Manager, Bookkeeper, Stenographer, Office Clerk, High School Teacher, Grade School Teacher, Nurse, Sales Proprietor and Retail Saleswoman. Numerical scores are obtained which are expressed in letter ratings A, B and C.

The questionnaire was answered by 13,752 business and professional women. This group was rather heavily weighted with clerical workers as well as women residing in medium sized communities. However, it can be considered rather representative of mature experienced women at the higher occupational levels throughout the country. Reliability was established by dividing the occupations listed on the blank into two chance halves. The scores received on the two odd halves by fifty women in each of the ten occupations were correlated. The Spearman-Brown Formula was used to correct the coefficients of correlation. The average coefficients of correlation ranged from .738 to .980.

The distribution of scores made are given in percentages of the letter ratings A, B and C which are based on the scores made by the representatives of each of the ten occupations when measured by their own scale. An A rating in an occupation indicates that the interests of the subject are similar to those characteristic of women in the occupation for which the scale was developed. A C rating means that her interests are unlike those of women in that occupation. A B rating indicates that her interests are similar but not markedly so. The range of scores rated A, B and C is different for each scale. Critical scores limiting the range of those letters were arrived at by the use of Dr. Strong's method. In some of the occupations, however, particularly High School Teachers, Sales Proprietors and Retail Saleswomen, there were a substantial number of C ratings indicating that women engaged in these occupations have interests not characteristic of the occupation. Manson points out that the blank is not a measure of aptitude or ability.

The manual includes an appendix in which the typical attitudes toward each of the 160 occupations are shown as expressed by women in fourteen occupational groups. There is also listed information with regard to interest scores made by women in thirteen occupations other than for which scales were developed.

The blank is published by the Bureau of Business Research, University of Michigan, Ann Arbor, Michigan.

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H. B. H.

Strong Vocational Interest Test for Men and Women. This test has been developed by Edward K. Strong, Jr., during the last 19 years. Use of the test has demonstrated that men engaged in a particular occupation have a characteristic set of likes and dislikes which differentiate them from men following other vocations.

By means of the test it is possible to ascertain the pattern of interests with which a given individual's interests most nearly coincide, and hence the occupation for which he is best fitted, so far at least as his interests are concerned. When the test is thus used for guidance it is assumed that, if a man likes to do the things which men like who are successful in a given occupation, and dislikes to do the things which these same men dislike to do, he will feel at home in that occupational environment. Seemingly, also, he should be more effective there than somewhere else because he would be engaged, in the main, in work he liked.

Guidance in terms of interests also assumes that interests are fairly permanent. Among adults, interest scores on the test are surprisingly stable, the average correlation over a ten-year period being .75. Interests change somewhat between 15 and 23 years of age, one-third of the change occurring between 15.5 and 16.5 years, one-third between 16.5 and 18 years and the remainder between 18 and 23 years. Hence, the younger the boy, the greater the chance his interests will change in the next few years (1 and 3, Chapter 12).

As far as differentiating occupational groups is concerned, the validity of the test is high (3, Chapter 7). For guidance purposes the validity of the test must be expressed in terms of how well individuals are assigned to occupations in which they succeed at least passably and at the same time find the work interesting. Occupation-engaged-in is dependent upon so many factors that the scores of no test could possibly correlate extremely high with such a criterion. Actual follow-up studies of college students show that there is surprisingly high agreement between occupations-engaged-in and interest scores obtained ten years earlier. (3, Chapters 3, 16.)

Using the "odds versus evens" technique, the average coefficient

Stenographer, Office Clerk, High School Teacher, Grade School Teacher, Nurse, Sales Proprietor and Retail Saleswoman. Numerical scores are obtained which are expressed in letter ratings A, B and C.

The questionnaire was answered by 13,752 business and professional women. This group was rather heavily weighted with clerical workers as well as women residing in medium sized communities. However, it can be considered rather representative of mature experienced women at the higher occupational levels throughout the country. Reliability was established by dividing the occupations listed on the blank into two chance halves. The scores received on the two odd halves by fifty women in each of the ten occupations were correlated. The Spearman-Brown Formula was used to correct the coefficients of correlation. The average coefficients of correlation ranged from .738 to .980.

The distribution of scores made are given in percentages of the letter ratings A, B and C which are based on the scores made by the representatives of each of the ten occupations when measured by their own scale. An A rating in an occupation indicates that the interests of the subject are similar to those characteristic of women in the occupation for which the scale was developed. A C rating means that her interests are unlike those of women in that occupation. A B rating indicates that her interests are similar but not markedly so. The range of scores rated A, B and C is different for each scale. Critical scores limiting the range of those letters were arrived at by the use of Dr. Strong's method. In some of the occupations, however, particularly High School Teachers, Sales Proprietors and Retail Saleswomen, there were a substantial number of C ratings indicating that women engaged in these occupations have interests not characteristic of the occupation. Manson points out that the blank is not a measure of aptitude or ability.

The manual includes an appendix in which the typical attitudes toward each of the 160 occupations are shown as expressed by women in fourteen occupational groups. There is also listed information with regard to interest scores made by women in thirteen occupations other than for which scales were developed.

The blank is published by the Bureau of Business Research, University of Michigan, Ann Arbor, Michigan.

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H. B. H.

Strong Vocational Interest Test for Men and Women. This test has been developed by Edward K. Strong, Jr., during the last 19 years. Use of the test has demonstrated that men engaged in a particular occupation have a characteristic set of likes and dislikes which differentiate them from men following other vocations.

By means of the test it is possible to ascertain the pattern of interests with which a given individual's interests most nearly coincide, and hence the occupation for which he is best fitted, so far at least as his interests are concerned. When the test is thus used for guidance it is assumed that, if a man likes to do the things which men like who are successful in a given occupation, and dislikes to do the things which these same men dislike to do, he will feel at home in that occupational environment. Seemingly, also, he should be more effective there than somewhere else because he would be engaged, in the main, in work he liked.

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Using the "odds versus evens" technique, the average coefficient of reliability of 36 scales for men is .877. The test-retest technique with interval of one week gives slightly higher coefficients.

Scales are available for scoring the interests of the following men's occupations: accountant, advertiser, architect, artist, author-journalist, aviator, banker, carpenter, certified public accountant, chemist, city school superintendent, dentist, engineer, farmer, forest service, lawyer, life insurance salesman, mathematician, mathematics-science teacher, minister, musician, office worker, personnel manager, physician, physicist, policeman, president of manufacturing company, printer, production manager, psychologist, public administrator, purchasing agent, real estate salesman, sales manager, social science teacher, Y.M.C.A. physical director and Y.M.C.A. secretary.

Available scales for women's occupations are: author; artist; buyer; dentist; dietitian; elementary school teacher; high school teacher of English, mathematics-science, physical education, and social sciences; home economics teacher; housewife; laboratory technician; lawyer; librarian; life insurance saleswoman; nurse; physician; psychologist; occupational therapist; office worker; social worker; stenographer and Y.W.C.A. Secretary.

Both men and women can also be scored for masculinity-femininity and men for interest maturity and occupational level, i.e., the extent to which one's interests agree with those of successful business and professional men in contrast to the interests of common laborers. (3, Chapters 10–14) Senior administrators score higher on this scale than junior administrators and still higher than employees.

Norms for the occupational interest scales are based on 19,000 successfully employed men and women. Norms for the three non-occupational scales are based on 5,600 cases.

Blanks for men and women and scoring scales with norms are published by the Stanford University Press, Stanford University, California.

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E. K. S., Jr.

Terman-Cox Attitude-Interest Analysis Test. This test, devised and standardized by Lewis M. Terman and Catharine Cox Miles, is a disguised measure of mental masculinity and femininity. It is commonly referred to as the M-F test.

There are two forms of the test (Form A and Form B) which are closely matched for nature of content and yield comparable scores. Each form includes seven sub-tests which tap sex differences in as many different fields: namely, ink blot associations, word associations, information, emotional and ethical attitudes, assorted interests, and introvertive tendencies. In all, there are 454 items in each of the two forms.

The test was devised by empirical procedures. First the literature of sex differences was searched for data that would suggest areas in which sex differences are likely to be found. Then trial items were made up and administered to male and female groups at various educational levels from the seventh grade through college, and also to men and women in the vocations. Of several thousand items that were tried out in this way, only those were retained which showed fairly consistent sex differences in at least 3 of the 4 sex groups compared.

The validity of the M-F test is inherent in the method by which it was devised; that is, its validity for use in cultural groups represented in the United States of 1930. This follows from the fact that all items retained did actually show consistent sex differences. The sex classification of the subjects presents an unmistakable dichotomy, quite unlike the rating of subjects as introvert or extrovert, radical or conservative, dominant or submissive, etc. It does not necessarily follow, however, that the test would be found equally valid in another type of culture, and no assumption is made regarding the relative rôles of heredity and environment in determining M-F scores.

The reliability of the test as measured by Form A against Form B and also by the split-half method is close to .80 for single sex groups and around .90 for the sexes combined. These figures represent average reliabilities for several different groups.

The test was administered by the authors to more than 6,000 subjects, including comparable sex groups of many different kinds. All the groups tested showed for each sex a very wide range of M-F scores and a considerable over-lap of the score distributions for males and females. The most masculine minded women score more masculine than the average man, and the most feminine minded men more feminine than the average woman.

Correlations of M-F test scores have been computed with many variables, including age, education, intelligence, occupational interests, physical measurements, personality trait ratings, personality test scores, etc. In the case of males there is a marked negative correlation of scores with age. For them masculinity is at its peak in the early 20's and declines gradually until by the age of 70 to 80 the mean score is about midway between average males and females. In the case of women there is little correlation with age. For males M-F scores tend to correlate negatively with education and intelligence, but for females this correlation is positive. For example, *Who's Who* men score low in masculinity while women in *Who's Who* tend to score more masculine than the average woman.

The most masculine of all male groups were male college athletes and next to these were engineers. The lowest masculinity scores among males were found for male sex inverts, next were unselected men between 70 and 80 years old, and just above these were clergymen and artists. The most masculine female groups were superior athletes in college. Below these were women who had completed the M.D. or Ph.D. degree and next to the latter were *Who's Who* women. The most feminine female group tested was composed of domestic employees and only a little less feminine than these were stenographers, dressmakers, and mothers of gifted children.

Terman and Miles found only low and doubtfully reliable correlations between M-F scores and individual physical measurements of college men and college women. Similarly low correlations with body build of males have been reported by Child and Sheldon, and also by Gilkinson, but the latter found a fairly reliable positive correlation between M-F score and voice pitch.

When subjects were rated by teachers or by their associates for mental masculinity and femininity, it was found that the reliability of the resulting ratings were extremely low; also that the ratings correlate very little with scores on the M-F test. The indications are that *mental* masculinity and femininity cannot be accurately appraised from general observation. However, there is marked relationship between M-F scores and the amount of interest which subjects report in such things as athletics, religion, travel, adventure, and various occupations.

Correlations of M-F scores with other personality tests were for the most part low. In both sexes masculinity is positively associated with dominance, as measured by the Bernreuter test, and negatively associated with introversion.

Kelly's passive male homosexuals, although they covered a fairly wide range of scores, average more feminine than masculine (ref. 4, p. 257). This result has been confirmed by Henry. Application of the test to a small number of gifted women homosexuals showed a strong trend toward high masculinity. A word of caution is necessary here. Although a majority of homosexuals show mental inversion in M-F scores, only a minority of the latter are homosexuals. Many highly feminine men and many highly masculine women make perfectly normal heterosexual adjustments.

It has been found possible for college subjects to fake their scores when they are instructed to do so. This is the reason for the camouflaged nature of the title given the published test.

The test is published by the McGraw-Hill Book Company, 330 West 42nd Street, New York City.

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L. M. T.

INTERESTS, VOCATIONAL

Introduction

Vocational interests may be defined as the personality traits which have significance for vocational success and satisfaction. These traits are manifested as likes, dislikes, indifferences, preferences, and evaluative attitudes. They are correlated to some extent with vocational choices, but are too deep-seated and too general to be perfect indicators of any such specific outcome as vocational choice.

Human interests, vocational and otherwise, include some transient whims and fancies. These appear to be unimportant, only slightly related to abilities, relatively unstable, and markedly influenced by chance factors present in the environment. In the early period of interest measurement, as shown by Fryer's review,[2] inadequate procedures often resulted in the measurement of such transient interest factors. As a result, much of the literature on so-called vocational interests is irrelevant to our present purposes.

People also have some interests which are manifestations of firmly-ingrained habits, or of inherited traits. These interests are organized to some extent, and are expressed in tendencies toward selective types of response. Such interests are related to abilities, to inherited characteristics, and to stable habits. They are manifestations of individuality. Insofar as a person's individuality is a factor affecting his success and happiness in his occupation, such traits, or so-called interests, are important in vocational choice. The modern interest inventory has value primarily because the technical method employed tends to confine the results to measurements of these somewhat stable characteristics.

Developmental Nature of Interests

Interests as here defined are of course not independent of other aspects of development. They are by nature adjustive mechanisms. In a given culture, individuals are exposed to a variety of stimuli, ranging from the most repellent to the most attractive, related to needs of the individual and of society, fitted now to one values system, now to another. As individuals grow up, they attain only very gradually the degree of maturity and of personality organization necessary to a stable adjustment in a complex culture. The process of adjustment, of which interests reflect one aspect, requires a certain amount of learning ability, a certain degree of appreciation of one's own abilities and limitations, and a certain amount of experience. Interests of the type we are discussing are therefore somewhat related to intelligence, to emotional organization, to age, and to experience.

In growing up, the individual is confronted with several different values systems relating to occupations. He finds these values represented in his environment in the persons of the banker, the minister, the artist, the politician, the scientist, the business man, the teacher, and the social worker. The preferences by which these people live are often contradictory to one another. The individual is exposed to all of them, and to many more, some of them having a direct and obvious relationship to his personal and immediate needs, others relating to his future needs and not appreciated. The individual tends to make a choice, and the environment tends to make a choice for him in some instances. Because of the complexity of the situation, the vocational interests of the individual at any one time may be well or poorly formed, mature or immature, appropriate or inappropriate to him, and therefore only more or less stable.

The Measurement of Vocational Interests

Vocational interests are traits of personality. They are to be inferred only through methods which take account of fairly large numbers of indicators. The older, rather informal approach to the study of vocational interests was inadequate. It is now generally recognized that responses to informal questionnaires about interests furnish very deceptive indications, especially where the number of questions asked is small. Modern measurement of vocational interests is technical, making use of standardized tests.

The general procedure used in testing or measuring interests is to secure from the person tested reactions to a large number of small details or stimuli. The typical test includes lists of occupations, school subjects, amusements, activities, peculiarities of people, and conditions of work, each to be marked in such a way as to indicate liking, indifference, disliking, ignorance, or preference. Sometimes the subject is asked to indicate choice between two activities, and sometimes he is asked to furnish self-ratings of his abilities and personal characteristics. The subject is usually able to indicate his reaction to such details. The details have significance for occupational success and satisfaction. The test is so standardized that the scoring process furnishes the necessary summary of detailed indications.

Men in a given occupation have a characteristic pattern of likes and dislikes. The Strong Vocational Interest Blanks are standardized in such a way that the individual's score indicates the extent to which he has the pattern of likes and dislikes characteristic of persons in each of several occupational groups. For example, by taking the test a boy might discover whether he has the interests characteristic of successful engineers, or of lawyers, or of doctors.

The Kuder Preference Record has similar items, arranged in groups of three, from which the person tested is to pick out the one most liked and the one most disliked activity. This test is scored for interests in nine types of activities: mechanical, computational, scientific, persuasive, artistic, literary, musical, social, and clerical. There are separate norms for men and women. The manual indicates the various occupations involving each of the nine different kinds of activities.

The Allport-Vernon Study of Values has often been classed as a test of interests. It is scored to yield a profile of six points, based upon theoretical, economic, aesthetic, social, political, and religious interests. Like the Kuder Preference Record, the Study of Values has a scoring procedure which emphasizes choice among groups of items.

The Lee-Thorpe Occupational Interest Inventory appears in several different forms for use at intermediate and advanced educational levels. The fields of interest for which it is scored are personal-social, natural, mechanical, business, artistic, and scientific. It also yields measures of verbal, manipulative, and computational types of interest, as well as of level of interest.

There are many vocational or occupational interest inventories in use; the above-mentioned ones will serve to indicate their general nature. The form in which each one appears, and the manner in which it is used, indicates that at present there is much experimentation with techniques and procedures, in the attempt to evolve efficient techniques, for measurement of interests, and for use of the resulting scores in guidance.

A survey[1] of studies published during the last ten years indicates that the effective interest inventory must satisfy a number of requirements. First, it must be sufficiently long to secure an adequate sampling of responses. The Strong Vocational Interest Test, for example, contains 400 items, takes about forty minutes testing time for the average adult. Some of the inventories have over 600 items, others fewer than 100. The form of item of course affects the reliability of the test, but in general it may be said that those tests including fewer than 100 items, or those taking only five or ten minutes to administer, are not likely to be sufficiently reliable.

The adequate vocational interest test must be a standardized, technical instrument. It must be organized about a set of practical and effective ideas, it must have proved its worth through experience, and it must be provided with an adequate manual. In particular, occupational norms, and educational norms, are needed. Age norms, grade norms, and percentile norms are useful. The use of such tests in guidance requires the provision of objective aids, in view of the complexity of vocational guidance, a complexity too great to permit effective work through dependence solely upon unaided subjective judgment.

A number of studies have indicated that the best vocational interest inventories are highly reliable. The reliability coefficients vary with the occupations and activities for which the blanks are scored, but in general the coefficients of reliability vary from .60 to .95, and are usually comparable with those obtainable from group tests of intelligence. The test scores are, in most instances, much more reliable than the scores on three-hour final examinations as used in most college courses.

There have been numerous studies of the validity of the best-known vocational interest inventories. These studies may be grouped under five headings, as the tests have commonly been judged against about five criteria, namely, the extent to which the tests: (1) agree with other indications of interests; (2) predict educational choices; (3) predict success in curricula chosen in relation to interests; (4) predict occupational choices; (5) predict occupational success.

Studies of the first type indicate that the different interest tests do not agree with one another to any high degree, but do often agree with other indications of interests. Part of the confusion here appears to be due to the difficulty of devising clear-cut tests of complicated and many-sided hypotheses. The scores obtained from the inventories are arranged about different methods of analyzing and approaching the problem of measurement of interests for use in guidance. The scores need not agree perfectly, any more than photographs of a house taken from different directions need to look the same. The type of diagnosis made by a clinician on the basis of the collection of scores from one test should agree with that diagnosis made when another comparable test is used. This type of agreement is seldom examined, for although there are a few exceptions, clinical methods for use of most of the tests in guidance are not well developed. Some writers consider that because different tests disagree, none of them is valid. This does not follow, especially since a number of studies have indicated that certain ones among the published inventories are much more satisfactory than others. A number of workers have attempted an evaluation of the available inventories on the basis of opinions of persons counseled, or on the basis of "expert" opinion, with somewhat inconclusive results. The best-standardized inventories are considered very effective, by persons engaged in personnel work in schools and industries.

Many studies have shown that the Strong Vocational Interest Blank is effective for prediction of choice of curricula on the basis of measured interests. For example, the profile of interest scores enables one to predict rather well whether persons will undertake college work in engineering, in medicine, or in liberal arts. This type of prediction is significant for two reasons: first, going to school is the occupation of young persons often for a significant number of years; second, there is not independence, but instead there is marked agreement between choice of curricula and ultimate choice of occupation, since the former is prerequisite to the latter.

Educational success or scholarship is not very well predicted by means of interest tests. There are too many factors affecting scholarship to permit it to be easily predicted. Scholarship is markedly correlated with intelligence, but interests are only slightly correlated with intelligence, within college groups. Economic needs, expenditure of energy in irrelevant activities, personal problems, love affairs, and all the personnel problems with which educational counselors are acquainted are reflected in scholarship. Finally, scholarship is only inadequately indicated by the available measures of it, which usually consist of grades in courses. The unreliability of the data upon which students' grades are based is well-known, so that the correlation of grades in any one course with interest scores is not likely to be high. The correlation of interest scores with grades in general should logically not be high. One should expect, then, just what one does find, i.e., moderately low correlations indicating some agreement between interests and evidences of scholarship. Some workers have found rather high correlations between differences in interest between two fields and corresponding differences in scholarship. These findings, at the present time, appear to require further investigation.

A number of scattered studies indicate that interest tests may be used to predict choice among occupations. Strong's follow-up study of Stanford Graduates indicates a marked tendency of alumni to follow the occupations for which their interest test scores were high, and to shift to those occupations later in instances where the initial choice was for a different occupation. More studies within this field are needed. It must be remembered that entrance into an occupation is not a final and perfect criterion of occupational interest, inasmuch as many persons enter occupations against their wishes, because of economic pressures, while others drift gently into occupations which are well-known and traditionally open to the individuals concerned. Logic forces one to expect mild agreement rather than any astonishing efficiency of prediction.

Turning from occuptional choice to consideration of occupational success, we are confronted with additional complexities. Occupational success is only poorly predicted, by interest test scores *or by any other means*. Occupational success furnishes very poor criteria of ability, drive, energy, or any other one thing. Vocational success is difficult to judge, the best criteria vary from job to job, and objective evidence is usually not available. No adequate general study of the prediction of vocational success by means of interest inventories has been made. The expectation, on the basis of data thus far available, must be that the prediction would be rather poor. No criterion of success appears to stand the strain of comparison of persons in different occupations. While one works for money, another works to convert people to religious faith, while another attempts to discover truth and a fourth strives to relieve suffering. However, within certain occupations some studies have shown that scores on interest tests will predict success with at least moderate effectiveness. For example, Strong's studies [3] indicate that scores on his Life Insurance Salesman scale predict success in selling life insurance. More studies within single occupational groups would be desirable.

Special Problems of Technique

Several special problems in the use of interest inventories have engaged the attention of research workers for a number of years. These problems may be listed as follows: (1) simplification of the scoring in the interests of economy; (2) planning or organizing the whole program around the measurement of a few traits or variables rather than the large number of scores yielded by the inventories; (3) selection of appropriate centers of reference to enable efficiency of measurement and to permit efficient separation of allied professional groups; (4) working out suitable clinical methods for practical use of the tests in personnel work.

In scoring the interest inventories, weights are assigned to item responses, the weights being proportional to the usefulness of the tests in discriminating between occupational groups. A scoring scheme was devised by T. L. Kelley, based upon the use of four-fold tables to indicate the correlation between the responses to the item and the presence of the persons in either of two occupational classifications. The scores yielded by the formula ranged originally from plus 31 to minus 31. Subsequent research has indicated that little is lost through reduction of the range of weights to a nine-point range, from plus four through minus four. Studies by Dunlap and his collaborators indicate that the range of weights can be reduced still further with little loss. Investigations by Strong and his co-workers tend to show, using a somewhat different criterion, that a loss in efficiency results from any reduction of scoring weights below the nine-point range. In summary, one may say that the most effective use of interest tests involves the use of scoring schemes which are laborious and expensive. This fact restricts the use of the tests. Numerous workers have tried, and others are still trying, to devise scoring schemes that will be less laborious and less expensive but still effective.

The second listed problem concerns the number of interest scores to be used in diagnosis of a person's interests. One approach to the problem of reduction of the number of variables is offered through factor analysis. The Strong Vocational Interest Blank for

Men yields, for example, over thirty interest scores. Several studies have indicated that the scores on this blank may be explained rather well in terms of four interest factors, which have been named by Thurstone as interest in science, in language, in business, and in people. Another approach to the problem of classification of interest scores is offered through consideration of the practical aspects of personnel work, especially those dealing with the facts of occupational mobility. Still other aids are offered through the construction of general scoring schemes, such as Strong's occupational level score, the Lee-Thorpe level-of-interest score, the Allport-Vernon types of interest, and the Kuder nine-point classification in terms of activities instead of occupations. The general problem here is related to the one of economy in scoring, since the struggle is aimed at economy of time, effort, or money, through adoption of a systematic and efficient procedure. For example, if one scoring system can indicate whether a person's interests are on the professional level or on a sub-professional level, later scoring can include fewer scales, and different scales for different persons. For satisfactory solution of such problems, we look to the future.

The problem of selection of appropriate centers of reference may be exemplified by Strong's studies of women's vocational interests. As long as the interests of professional groups of women were contrasted with those of housewives, the various professional groups were not suitably separated by the various scales. However, when the interests of the group of women in one profession were contrasted with those of all the other women's professional groups, the desired discrimination between professional groups was secured. Similar comparisons involving the work of Strong and of Estes and Horn, measuring interests of various groups of engineers, support the conclusion that the choice of reference group is a significant determiner of the nature of the resulting scale. The facts emerging from this sort of study may have many important theoretical and practical applications in the near future.

The fourth problem listed is that of working out suitable clinical methods for practical use of interest tests in personnel work. A rather complete program of procedures for use of the Strong Vocational Interest Blank in student personnel work has been described by Darley. A number of personnel workers in schools and industries have indicated that vocational interest blanks are useful as aids to interviews. The groundwork has been laid for the use of such tests in high schools as well as in colleges and in industries, but there remain many tasks to be completed before a smooth program can be established for use of vocational interest tests in high school counseling. Most of the available inventories are relatively new; the manuals offer only general suggestions for use in counseling. The scope and sequence of procedures for use of such tests in guidance has yet to be developed in detail.

Individual Differences in Vocational Interests

The state of our knowledge at present is such that no complete chapter can be written on individual differences in interests. It is evident that vocational interests are complex and many-sided, varying in relation to age, sex, race, heredity, family environment, and many other variables. Vocational interests are traits, subject to many influences, developed in relation to other phases of development of the human organism.

Studies[1] in the University of California Institute of Child Welfare have shown that vocational interests, as measured by modern inventory methods, are present in a well-developed state in many high-school boys and girls in the tenth grade. In any normal sampling, well-developed vocational interests are not to be found in 100 per cent of the individuals at any age. However, as persons grow older, the development of vocational interest patterns continues noticeably at least to the age of about thirty. Scores on the various scales of the inventories do not show high correlations with age even during the years of rapid development, as shown by various investigations of high-school and college samplings. The development which takes place with age may be thought of as a process of assimilation of cultural values, and of development and organization of the personality. Scores in general need not increase with age; instead, some scores rise, others fall, and the pattern changes with age. It is clear that the pattern of interests characteristic of an occupational group may be present without experience in the occupation in question. We are dealing, apparently, with traits of personality which happen to have occupational implications. Strong's studies[3] show that the change with age is relatively rapid in early life, and very slight after the age of thirty-five or thereabouts. The changes are patterned, so that older men's interests are affected by some tendency to avoid adventure and activity, and a tendency to be more reflective, more interested in reading, and more broadly social in their preferences.

Nothing is really known about race differences in interests, but a few studies have shed some light upon interest differences of census groups who happen to belong to different racial groups. The interests of Negroes have not been adequately studied, but they appear to be somewhat restricted to occupations in personal service, music, and so forth which are traditionally open to them. The Stanford studies[3] have shown that the interests of American citizens of Japanese origin tend to be restricted to technical occupations more than are the interests of most comparable groups of young persons. This is probably a response to prevalent social pressures. Vocational interests are cultural phenomena. It is to be expected that the interests of minority groups might yield very significant material for research, but the findings are not to be regarded primarily as indicative of race differences.

It has been commonly taken for granted that interests are learned, but undoubtedly there is some dependence upon inherited characteristics; such dependence is suggested by the relationships of interest to age (maturation), and intelligence. Like most nature-nurture problems, the general question as to the origins of interests does not yield itself to any crucial test. There are published studies[1, 3] showing that identical twins are more similar in interest than fraternal twins, siblings, or parents and children. The correlations tend to be about .50 for identical twins, and .25 to .30 for siblings, fraternal twins, and fathers and sons. The pattern of resemblance coefficients suggests the effect of hereditary factors, while the fact that the correlations are lower than those for abilities indicates a probable effect of environmental influences. Training studies indicate that specific preferences among occupations, or specific attitudes can be altered by controllable environmental stimulation. The whole pattern of published studies leads to the conclusion that individual differences in interests, as in mental abilities and physical traits, are dependent upon both hereditary determiners and environmental stimulation. Thirty years ago the prevalent view was more extreme, emphasizing environmental influences.

Sex differences in interests are very noticeable, and in general are in agreement with tradition. Thus the interests characteristic of nurses are found primarily among girls, those of engineers primarily among boys and men. However, the separation is far from complete, since more than one study has shown that the interests of girls as measured by occupational scales, are often more clear-cut than those of boys, when the Strong Interest Blank for Men is used with both groups. Only in the science groups of occupations are the interests of boys and men uniformly more marked and prevalent than those of girls and women. Various interest blanks have been used in studies which show that girls and women more often have interests in personal service, in broadly social occupations, and in many types of business occupations. Women are to be found in most occupations, including dentistry, medicine, and engineering, but of course more often in teaching, office work, nursing, and other occupations traditionally open to women. The old idea that the interests of girls and women are less channelized than those of men has received little support in recent years. The idea may be correct, but the manifestations upon which the idea was originally supported have recently appeared to be artifacts resulting from use of a faulty frame of reference in measuring the interests of women. It appears that the interests of girls are restricted to fewer occupations than those of boys and men, but the meaning of this in terms of scores on modern vocational interest inventories is yet to be clarified.

The Problem of Vocational Choice

Even with a perfect diagnosis of interests, general abilities, and special aptitudes, vocational choice would still present problems. In the absence of such diagnosis, the difficulties are very great indeed. Many young people drift into their occupations, many shift about aimlessly from one wrong choice to another, others are anxious, troubled by indecision. Many wear themselves out, becoming frustrated and defeated by a struggle for a place in an occupation for which they are not fitted. Our secondary schools, colleges, and universities offer an opportunity to render some of the needed service in training for leadership and for service and effective citizenship. In preparation for professional work, and for skilled jobs, the programs of training offer the best situation for diagnosis and guidance into the right occupations. This fact presents a challenge which has not been met in our American schools and colleges. People still enter even our leading professions through a process of blundering and drifting. In a democracy, it would seem most important to use the most efficient methods possible for finding and using leadership, and for placing each citizen in the occupation in which he can render his best service.

Stated occupational choices, as well as attempts to enter occupations, are markedly affected by the prestige hierarchy of occupations. It is a well-recognized fact that some occupations, such as that of the physician, are accorded the highest measure of respect, while others, such as that of laborer, have lower status. This hierarchy is recognized, and the position of a given occupation in it widely accepted, by persons in the given occupation and by those outside the given occupation. The financial and social rewards of occupations differ greatly, as well as the conditions of work. As a result in part of our democratic and competitive teaching, young people strive to reach the top. In high schools and colleges the great majority of individuals strive toward the professions, largely in disregard of reality which indicates that relatively few can reach such goals. Often the occupational adjustments to be made following high school graduation, in college, and after college consist largely of a process of disillusionment. The whole sequence is marked by lack of planning, lack of realism, economic waste, frustration, and disappointment.

As things stand at present, vocational choices are affected by economic need, immediate opportunity, ability in general, special aptitudes, preferences and drives, and feelings of duty and responsibility, in varying proportions. The prediction of entrance into an occupation, and the guidance of an individual into the right occupation, are matters requiring individual attention, in a personnel program to be handled effectively only by qualified professional workers. The central consideration should be integration of the personality and guidance of the individual into the occupation in which he can be most happy and successful.

The vocational interest inventory has a place in any program of occupational guidance. Correct handling of a case involves consideration of interests, abilities, assets, liabilities, and environmental situations, all together. Sometimes the interest test aids in direct solution of a problem of indecision. Sometimes it does not solve a problem, but helps by clarifying the nature of the problem, as, for example, when a boy has well-developed interests in engineering, wants to become an engineer, and lacks the necessary ability. In such instances, the interest test is an objective aid to correct diagnosis.

Vocational choices can be to some extent controlled. Stated choices of occupation and entrance into occupations can be altered by simple programs of training, by furnishing relevant information about jobs, salaries, opportunities, and responsibilities. Attitudes toward jobs are often markedly changed when information is provided to take the place of prejudice and ignorance. Opportunities can often be provided when community resources are surveyed. Greater vision can be secured, to aid those with special talents, by state and nation wide surveys, coordinated with instruction in vocational education. The problems of vocational choice and of vocational education can be approached on several levels, from the routine of an ordinary employment office to the professional work in a bureau of public administration or the research in a university. The problems are of such significance to the social, economic, political, and cultural welfare of the nation that research and planning in student personnel should be among the most respected functions in our best institutions of higher learning.

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H. D. C.

INTEREST TESTS, EVALUATION OF. Research in the measurement and prediction of human behavior tends to indicate a very low correlation between measures of aptitude, ability, and achievement on the one hand, and interests on the other. Furthermore, the correlations between interest measures and job success or satisfaction also tend to be low. The first of these general research findings argues for the relative independence, in the organization of mental life, among interests, abilities, aptitudes, and achievement. The second directs attention again to the difficulties of finding criteria by which success and satisfaction are judged, and the use of these criteria in standardizing psychological tests.

Yet it is only through continued attention to the definition and measurement of interests that some insight can be gained into the motivational structure of the individual. In the field of guidance the determination of the individual's real interests is a paramount consideration. If interests are transitory or capriciously determined, the individual may experience dissatisfaction and unrest as new interests supplant older trends. If, as appears more likely from the research evidence, broad interest patterns are laid down on a developmental basis and are relatively crystallized in late adolescence, the accurate measurement of these interests is an essential step in differential guidance and placement.

In the field of vocational adjustment, as distinguished from guidance, the maintenance of a motivated and satisfied working group depends in an indeterminate but large part on the satisfactions that each individual achieves in his daily tasks and associations. This aspect of the problem of interest measurement has been given relatively little attention either in the research or practical approach to industrial relations. Measures of job satisfaction have been attempted by Hoppock,[7] but such measures have not yet been used jointly in research involving the measurement of interests, so that that relation between measured satisfaction and interests is not yet clearly known.

Part of the difficulty in this field of measurement arises from the fact that no clear-cut definition of interests exists. At the one extreme is the casual liking or disliking directed toward a single object, person, idea, or job label. At the other extreme is the definition in which interests are structured out of the individual's attempts to match his self-estimate with the competitive reality of jobs and activities in which he chooses to engage or is forced to engage. Bordin[1] and Carter[2] have given stimulating discussions of the problem under this latter definition. Strong[9] uses an empiric and inductive definition in stating that interests are the sum total of likes and dislikes for a wide range of stimulus objects and activities. Darley[4] has attempted a definition in which occupational interests emerge from and are by-products of certain developmental personality characteristics. Parents and students seem to assume that interests can be invoked or brought into being by the effort of will: "I'd do all right in this subject (or job) if I could only get interested in it." This statement is familiar to counselors. Equally prevalent among laymen is the confusion that exists between abilities and interests, in spite of the low correlations between dependable measures of each of the two aspects of behavior.

In view of conflicting definitions, breadth of behavior involved, and difficulties of establishing criteria of the valid existence of interest patterns, it is understandable that interest measurement has developed less extensively than the measurement of intelligence or achievement or aptitude. There are fewer good tests of interests on the market than there are of other segments of behavior; there are fewer validity studies than can be found in the area of ability and achievement measurement; there are less well documented theories of the genetic, environmental, and developmental aspects of interests. But time and again the importance of interest measurement is apparent, both clinically and from the research standpoint. The counselor knows that self-estimates, or claimed occupational choices, are neither too dependable from year to year nor too predictive of the ultimate adjustment of the individual. The usual occupational choice made in high school or college is compounded in varying degrees of: (1) desires for prestige, high income, or security; (2) family pressures and influences; (3) romantic conceptions of job duties and requirements; (4) doubtfully accurate self-estimates of strength and weaknesses in abilities and aptitudes; and (5) doubtfully accurate estimates of labor markets and occupational trends. The extent to which inappropriate or overly ambitious claimed occupational choices are reflected in existing high student mortality rates and job dissatisfaction cannot be indexed, but they undoubtedly are causative factors in many individual cases.

Specific tests of vocational interests are reviewed elsewhere in this volume. It seems important here to discuss research problems common to the field, in order to outline some criteria for the choice of a good test by stating the measurement problems which are involved. Carter [3] and Fowler [5] have given general reviews and bibliographic treatment of interest measurement, both of which extend the discussion of the field contained in Fryer's earlier book.[6] Strong [9] has brought together more than two decades of his own work in one summary volume. All these references are essential reading, but space does not permit their summary here.

Reliability

Generally speaking it is possible to produce as good split-half reliability and test-retest reliability in interest measurement as in any area of personality testing. In the present development of psychometric methods, almost any good interest test should show reliabilities from .70 up, with higher values for the reliability of a single testing.

Permanence

While this is one aspect of reliability of measurement, it also includes the psychological stability of the behavior being measured. It is possible to have a very reliable test which will yield divergent retest scores because the behavior being measured is itself variable. Only one of the available interest tests has been in use long enough to accumulate information on the permanence of vocational interests; in Strong's findings,[9] it appears that the interests he measures show considerable stability and permanence over a period of years.

Validating Procedures

The primary method of validation in interest measurement has been that of group differences. In the case of the Strong tests, a carefully selected adult sample of a specific occupation or profession has been contrasted with a "men-in-general" group, in order to isolate the responses that differentiate successful men and women from the general working population. In one form or another, this method of group differentiation as the basic validating technique runs through most of the tests developed. Garretson and Symonds used the method to differentiate pupils in academic, commercial, and industrial curricula in high school. Kuder started with the method in differentiating college students majoring in specified fields. From this method flows later validational research, such as prediction of success on the job or in school, factor analyses of intercorrelations of interest scores, and follow-up studies of the occupational careers of men and women with various interest scores collected during their college years.

When the group difference method of validation is used, the characteristics of the standardizing groups assume great importance. Strong has given more thought and attention to this problem than any other research worker in the field. He has experimented with occupational groups of varying size and definition, and has also experimented with various groups of "men-in-general." His scoring keys and norms are therefore grounded in more dependable samples than is true of other interest tests.

In general, more psychological meaning has been derived from factor analysis studies of interest scores and follow-up studies of the careers of people tested early than from predictions by interest scores of success on the job or in school. Ability, aptitude, and achievement measures give more straightforward and usable predictions than do interest test scores. Interest scores, on the other hand, are more fruitful in the study of job satisfaction and job stability or staying power. Factor analyses of interest scores provide significant clues to the existence of interest types and patterns, from which theoretical formulations may follow as guides for later research.

In all aspects of validity, the Strong blanks are the only ones that have been used long enough to accumulate extensive validity data. Other tests may in time prove equally valid; at present, they lack the mass of empiric data that Strong has collected.

Practicality and Economy

Multiple weighting schemes and the sheer number of separate scores yielded by one individual test combine to make interest measurement a relatively expensive and time-consuming process. The Kuder Preference Record is probably the most economical test of sufficient reliability and range of scores for sound use, although methods of more rapid scoring of the Strong blanks now exist. The balance to be maintained between factors of economy and factors of soundness for clinical use is always debatable. Where possible in counseling or guidance, it would seem desirable to use the best measures available, even though they are more expensive. But if the alternative becomes one of limited measurement or no measurement whatsoever, then the more economical test must be used, even though it may not be the best test from all other standpoints.

Although the bibliography of interest testing covers more than two decades, the unexplored research areas are many and important. Scoring keys for specific occupations are actually few in number; Strong has produced approximately thirty such occupational keys. This is not as small as it may first seem, since factor analyses of this group of keys permit generalizations beyond the specific occupations into a type classification of occupations, under which ability and achievement factors can be differentially used. Darley[4] has attempted to illustrate this procedure in the use of the Strong blanks. The Kuder Preference Record is not based on specific occupational keys, but is generalized to cover occupations in which his preference types are *assumed* to exist. Future research must be directed toward the study of a wider range of occupations. There must also be a research approach to the problems of the limits of interest measurement as the occupations move down the scale toward the great mass of gainfully employed workers in relatively routinized, unspectacular jobs. It is theoretically probable that some occupational groups, in which large masses of workers will be found, are psychologically indistinguishable from other mass occupations, so far as differential interests are concerned. If this be true then research emphasis must shift to a study of the extrinsic motivational factors, generally subsumed under employer-employee relations, upon which job satisfaction rests.

As the obverse of the study of more occupational groups and a wider range of occupations in our industrial hierarchy, research must be directed toward the interests of defined maladjusted groups of workers and students, in an effort to determine the part played by measured interests in creating or alleviating occupational and educational dissatisfaction or failure. One study, by Sarbin and Anderson,[8] contains significant clues regarding the outcomes of conflicts between dominant measured interest patterns and the modal occupation of the individual.

There is great need for more longitudinal studies, particularly those with interest measurement starting as early as the junior high school years. Some of the evidence indicates the emergence of defined interest patterns around age sixteen, so that guidance is possible to a very real degree in this age range. But the earlier developmental phases of vocational interests remain unknown.

While the existing studies of interests and abilities or aptitudes show relatively low intercorrelations, it is important to approach this problem again with more precise measuring instruments, such as those which can be developed from careful factor analysis research. Extreme cases of outstanding performance by individuals who find their jobs an all-consuming interest argue for some interplay and interaction between interests and abilities that has not yet been given adequate research definition. In this regard it is important to study the different ways in which different people carry out jobs that are ostensibly the same. The individual can to some extent structure the complex of activities that comprise his job in a way that is most satisfying to him. These personalized definitions may contain some of the clues to job adjustment and satisfaction, over and above the particular set of interest test scores that characterize the individual.

A final important area of research is to be found in the study of the interrelations among many personality traits that now appear measurable, including interests as one set of personality traits. In the study by Darley,[4] it appeared that people with dominant interest patterns also had differential patterns of personality test scores, lending further support to the generalized concept that birds of a feather do tend to flock together, occupationally at least, and that some of our stereotypes of personalities characteristic of jobs may actually exist among successful representatives of various occupational groups.

As research studies of the types mentioned above appear more frequently in the literature, the full motivational and differential effect of interests will be more clearly visible.

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J. G. D.

Guidance Summary Form. The object of this Form is to provide interviewers and counselors with pertinent personal data concerning persons to be interviewed or counseled. It was originally devised (in 1927–28) by Paul S. Achilles, and Agnes Leahy under Supervision of Walter V. Bingham. It has undergone several revisions, based on practical use in educational and vocational guidance. Form B was prepared by Paul S. Achilles and copyrighted in 1933 by the Psychological Corporation. These earlier forms were entitled, "Aids to the Vocational Interview." G. K. Bennett and C. E. Orbach revised the form again in 1946, using the new title.

The form may be filled out by the counselee in advance of the interview, or jointly with the counselor during an interview. In either event its value lies in covering a wide range of factors of frequent significance in vocational and personal adjustment. The usefulness of the information thus assembled naturally varies with its accuracy and relevance in any given case and with the training and skill of the interviewer.

The sections are: General Information, Education, Work Experience, Health, Interests, and Self-evaluation. Space is also provided for the interviewee to write a paragraph about his vocational ambitions.

Many important facts are reported by answers to simple questions. Based upon their experiences with problems of educational and vocational adjustment, the authors have also included questions which will yield information regarding the attitudes and interests of the client, usually by means of questions that seem quite factual in themselves. This latter kind of information provides the advisor with a basis for effective interviewing.

A one-page chart permits recording of psychometric results and writing a summary of the data. Two pages, with suitable captions, provide for systematic recording of the clinical interview and final summary. No manual is required.

The publisher of this Form is the Psychological Corporation, 522 Fifth Avenue, New York 15, New York.

Reference[1]

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H. S.

INTERVIEWING. In the guidance situation an interview is a face-to-face conversation between individuals who are attempting to arrive at the solution of some problem. It is a conversation directed to a definite purpose. The present article is concerned with the interview as used in counseling procedures, particularly counseling in regard to vocational choice and the inextricably related educational, social, and emotional problems.

The interview in this situation becomes both the means of integrating the various processes of vocational guidance and a tool for securing information, evaluating it, and arriving at tentative solutions in regard to the problems of the person being interviewed. Although extensively criticized on various cogent grounds, no adequate substitute for the interview has been offered. The interview is the only means we have for making certain kinds of appraisal in vocational guidance, and perforce must be used. For example, due to the absence of valid tests, personal judgment must be exercised in regard to certain personality traits.

This is not meant to imply that the interview is without limitations. It can be only an incident, albeit, an important one, in vocational guidance work. It cannot take the place of varied occupational experience, wide reading in the literature about occupations, or observation of the various kinds of work. Usually to know a person well you must be in intimate contact with him over a considerable period of time, preferably seeing him in a variety of situations. Yet, the vocational guidance worker has but a few hours at his disposal, and probably sees the client in one situation only, his own office. Nevertheless, the guidance counselor is expected to learn enough about the interviewee to help him intelligently in reaching decisions about extremely important problems. It is well for the interviewer always to keep in mind the magnitude of his task and the pitifully small stock of information that he may glean in the allotted time. The problem of the guidance interviewer then becomes a matter of insuring that the really important facts necessary to assist the interviewee in a solution of his problems are reviewed, that the information necessary is gathered as quickly and efficiently as possible, that the relevant aptitudes, interests, and traits are appraised, and that the individual clearly sees his problems and is motivated to solve them.

The person interviewed always has at his command more information about himself than any interviewer can gather. If for no other reason than this, it becomes imperative that the interview be conducted on a cooperative basis. The interviewee must do his share of thinking and make the final decisions. The principle of self direction is applied. The interviewer explains; he does not appraise. Of course information is given by the counselor, but he should resist the temptation to lay down pronouncements from on high.

Appreciation of both differences and similarities among individuals receives consideration in an interview. An interviewer sees many individuals, and through study of guidance materials knows by proxy many other individuals. His task, then, is that of comparing individuals and in so doing making allowance for the uniqueness of each individual. In the interview he must place them in similar situations and yet be sufficiently flexible to adjust the situation to their differences.

Functions of the Interview

It is possible to separate for purposes of discussion three broad areas of function; namely, the securing of information, the evaluation of this and relevant but non-interview information, and the attempts at solution of the problem or problems. The securing of information, its evaluation, and its solution will be discussed in this sequence since it is the usual order of emphasis, although no one of the three so completely dominates the scene at any one time that the other functions are absent.

The information that is first sought generally centers on appropriate identification of at least one of the major problems facing the client which may or may not be the original query formulated by him. Since the client's method of stating the problem may touch upon only one minor phase of the real problem, the simplicity of the original question is by no means an adequate criterion of the complexity of the total problem. Considerable attention is given to the proper determination of the problem, but in so doing tact necessarily is exercised. The information desired is not merely facts about the person in the conventional sense; it is also instances of behavior, such as inflections, gestures, and facial expressions which help to portray the attitudes of the person, the values which he holds, the beliefs he expresses.

The data gathered from the interview and supplementary sources are cooperatively analysed in order to arrive at a determination of the causes of the difficulty and also to formulate a plan of attack on the problem. The interviewer furnishes relevant information about curricular requirements, occupational trends, requisite aptitudes, personality qualifications, and learning techniques, always being careful to present along with these impersonal data a comparison of the individual to the data in terms of his own strengths and weaknesses.

The means of solving the problem then come to the fore. The interviewer attempts to set up attitudes and points of view favorable to a solution that will eliminate or alleviate the problem. He gives the counsellee opportunities for emotional release by allowing him to talk things over. He uses persuasion, explanation, encouragement, reassurance, and desensitization so that the individual will be motivated to carry out endeavors or accept a point of view which will solve the problem. Although independent of the actual interview situation, arising from it are other means of solution which should be mentioned. The interviewer may take steps to remove external factors which are stumbling blocks to a solution, or arrange referral of the individual to experts in other fields.

Quite rightly not all problems are solved within the confines of the interview situation, but to be successful the interview should lead to attempts at solution. Often the interviewer stops before actual solution, bringing the interviewee merely to the point of clear realization of the possible courses of action. Certainly he should leave with the inquirer some definite task to be done, some inquiry to be made, or some obstacle to be surmounted. Needless to say, the client should be brought to a clear realization of the relationship of this task, inquiry, or obstacle to the suggested goals that he is attempting to achieve thereby. If he fails to understand why and in what way it will help to this end, his efforts will be merely perfunctory. It must again be emphasized that it is the client's prerogative to decide for himself. Despotism, benevolent or otherwise, is out of place in a guidance interview.

Preparing for and Supplementing the Interview

The interview is almost always planned before the appearance of the client. It may be argued that planning is impracticable because of the inability to anticipate the direction that the interview will take. This contention results from an erroneous opinion of the nature of preparing for the interview. Preparation does not imply that the exact course of a session can be anticipated. A distinction pertinent to this issue is that between the strategy and the tactics of an interview. It is the former, the general plan of attack, that can be decided in advance. The tactics, that which is actually said and done, may have unsuspected and unplanned ramifications so they are varied to meet varying conditions. Questions used when the information-seeking phase of the interview is prominent can be distinguished on the basis of strategy and tactics. In strategical planning there are developed what might be called initiating questions. The initiating questions are ones which open up some phase of the personal experience, background, accomplishments, attitudes, or traits of the client. Follow-up questions which are a matter of tactics are used to round out the information to the point where the interviewer is satisfied that a clear picture of the phase in question is obtained. Questions as to what the person interviewed meant by a certain statement, e.g., whether or not he took shop in school, are used to complete the picture produced by the initiating question on the nature of his mechanical experience. Follow-up questions are framed on the basis of the answers received to the initiating questions. The phases of evaluation and solution also may be prepared for in advance in somewhat the same fashion.

The interviewing process is supplemented by various records. Test scores, grade records, rating scales, check lists, recording blanks, and reports of psychiatric or medical consultations are often indispensable adjuncts to the interview. Of these, only the interview record form will be further described in the present article.

There are two varieties of record forms in common use; firstly, the information blank to be filled in by the client prior to the interview giving material that need not be developed first in the interview situation; and secondly, aids to the interviewer both to use during the interview to suggest initiating questions and to record pertinent findings from the interview. Both varieties of record forms may, of course, be combined in a single pamphlet. The *Aids to the Vocational Interview* Record Form B, developed by Paul S. Achilles, is typical. The counselee fills in his name, address, family and marital status, occupation, ambition, descriptions of his physique, health and appearance; checks his temperamental characteristics; gives a statement of his general ability and achievements; and describes his special abilities and aptitudes, interests, education, present vocational plans, and vocational experiences. Space is provided for the counselor to make a summary of the material furnished by the counselee, to record test data, and to summarize the material covered in the interview. Many counselors have found that the commercially distributed forms cannot be used in their particular situation because a blank prepared for general consumption cannot make allowance for local differences. Nevertheless, these forms should be carefully examined for suggestive items and methods of presentation adaptable to the local scene.

It is important to note that much information useful in the interview is of a routine character that may be provided by such devices. The interview should not be misused and the interviewer's time wasted by requiring him to ask questions that are amenable to either some form of written treatment or clerical routine.

To make such preparation for the interview as that discussed above implies that appointments are made and, consequently, that they are of a definite duration. However, every experienced interviewer knows that the secret of a good preparation is to be able to dispense with careful plans when the occasion demands it.

In one sense, the notes taken by the counselor are a means of supplementing the interview. Note taking during the interview is a methodological issue on which opinion is divided. To take notes in the presence of the client is to run the danger of impressing him with the formal character of the interview, thus making him more stilted and self-conscious than he otherwise would be. On the other hand, if notes are not taken, there is a chance that valuable clues will be forgotten. Often a compromise solution is indicated. After a casual mention of the necessity and advisability of taking notes, perhaps with a side remark regarding their inviolability, the interviewer proceeds unobtrusively to take notes during the session except on matters that may be embarrassing to the counselee. Thus essentially it becomes a matter of knowing when to take notes and when to forego the practice.

Personality of the Interviewer

In large measure the personality of the interviewer decides his interview procedures. His personality colors both the findings elicited and the final decisions reached. The interviewer shapes the interview by his personality traits, information, attitudes, beliefs, biases, and prejudices. Upon his personality depends the success or failure of the guidance attempted.

It is, therefore, of considerable practical importance to consider the personality qualifications desirable in the interviewer. He must have a genuinely sympathetic interest in people, and an understanding of, and fondness for people. This interest and understanding must be manifested in his behavior in such a fashion as to inspire liking and confidence. He must have a deserved reputation for kindliness, frankness, and the keeping of confidences. In order to function efficiently in the interview situation he must have a reasonably good memory, an ability to grasp and synthesize the disjointed fragments of fact, opinion, and feeling which are the raw materials of the interview, an interpretive capacity to understand the implication of these facts, and an ability to verbalize his interpretation of the facts clearly and accurately.

Since the interview is a situation in which there is an advisor-advisee relationship, it is very easy for the interviewer not only to develop feelings of superiority but also to act in accordance with these feelings. He must always be on the alert for these feelings manifested in a patronizing attitude, untactful dominance, use of the interview as a means of self-display, impatience, and superciliousness, to mention but a few. He must be on his guard against a feeling of omniscience, a feeling that his opinions are expressions of wisdom given from the heights of his infinite knowledge. When even mild manifestations of this Jehovah complex appear, he may be unwittingly guiding his client not in the direction that the facts indicate but merely in the direction that he happens to consider correct.

More broadly speaking, he must know himself rather more deeply than most people; he must be able to distinguish between facts and his own prejudices, biases, desires, and complexes; and he must want to grasp the real facts free from emotional coloring. Very difficult to overcome is the tendency to slant the facts so that they tend to support some wish or hypothesis of his own, indications to the contrary being neglected. A clear separation of fact and inference is desirable in such instances. Aggressions created by anxieties, and release of feelings by the interviewer have no place in the interview. Either he should see to it that the causes for such aggressions are eliminated by psychotherapy, or, what is more likely to be the case, attempt to control and to conceal them from the interviewee lest he too be influenced by them.

This objectivity in regard to his own personality and his reaction to the personalities of others must be nicely balanced with an ability to place himself in the position of the person being interviewed. Thus, an identification or fellow feeling with the client is extremely desirable. Deliberately attempting to view the situation as the interviewee sees it is often an interesting and illuminating experience.

The interviewer's personality must be such that he is capable of producing a cooperative adjustment on the part of the interviewee which in itself depends upon a favorable impression made by the interviewer. This adjustment is expressed succinctly as a state of rapport, a topic of such importance that the following section deals with it in some detail.

Rapport

Rapport exists when the interviewee's tendency to be on the defensive is overcome, when his confidence, trust, good will, and friendship are gained, when his resistance to discuss his problems is dissipated, and when he is frank because he feels his point of view is appreciated and respected. Rapport is essential both for analysis of the client's problems and for counseling in regard to possible solutions. Without it the interview will be unsuccessful since cooperation in securing the information necessary for analysis and the acceptance of possible solutions by the person interviewed will be limited, grudging, and lacking in motivation.

It is the responsibility of the counselor to establish and maintain this positive cooperative relationship. The previous discussion of the personality of the interviewer is directly pertinent since the characteristics discussed are precisely those that make for adequate rapport. His friendliness, interest, and personal understanding through which he inspires the client allow for this state to be established. Since people differ, the relationship differs; so there are no rules which fit all situations. All procedures of the interview should contribute to rapport, but at the onset certain techniques of rather wide but not universal applicability may be useful in its creation.

As much as circumstances will permit, an atmosphere of leisure and absorption in the problem of the particular client should be mustered. A clear desk, privacy, and arrangements for telephone calls to be diverted are aspects of the physical situation that contribute to rapport. The interviewer must avoid giving the impression that he is such a busy man that he must hurry on to the next "case." The interview is apt to be an ordeal for the client no matter how commonplace it has become to the interviewer, so an attempt at placing him at ease must be cultivated. After a cordial greeting by name, conversational informality and a few pleasantries are not necessarily so time-consuming as to be impossible. Much informal conversation can take place in sixty seconds. The person interviewed is generally not at ease because he is not familiar with the particular person-to-person situation in which he finds himself. He must make an adjustment to the personality of the counselor. He should be permitted to do this before his problems are analysed since they are bound to be emotionally toned and, at least to some degree, upsetting in themselves.

After this initial period the interview should be guided by the counselor to unembarrassing aspects of the client's life relevant to the problem as stated by him. Special interests, hobbies, matters of common knowledge, or other topics about which the client may speak with knowledge, assurance, and confidence are particularly suitable for this post-introductory period.

No question should be asked which the interviewer suspects the interviewee is not ready to answer. By observing him for clues of rapport in comments, inflections, gestures, and general attitude, the counselor gains help in determining the time when the client is psychologically receptive to deeper and more direct discussion.

As mentioned before, no techniques are universal in application.

Counselors sometimes find a direct approach, less gentle in character, more useful. The client has what appears to him to be a straightforward problem; he is likely to expect a straightforward answer. A frontal attack on the problem may sometimes be indicated.

Rapport is a relation which must be maintained; its establishment does not guarantee its continuance. Sensitive spots evidenced perhaps by emotional blocking, blushing, and nervousness should not be trampled on rough shod. A circuitous approach to the emotional area may be utilized at such indications. Flattery, humor, genuine praise, generous approval of accomplishment, and a stressing of the favorable aspects of the person are not out of place in maintaining rapport.

Even though rapport is most often thought of as positive or friendly, hostility, resentment, and even anger may occur in an interview in which it still exists. If there is still the undercurrent of understanding, pragmatically demonstrated by the productivity of the interview, such aberrations need not be taken too seriously since a more favorable attitude toward the interviewer can be elicited later.

Hazards in Interviewing

In an interview certain hazards are apt to be present which tend to vitiate it. They deserve consideration so that, in so far as possible, they may be avoided. They may be briefly characterized as linguistic hazards, unintentional suggestion, and erroneous inference.

Word meanings often produce unsuspected difficulties in the free conversational interchange of the interview. There may be mutual misunderstanding created by the vocabulary used resulting either from the use of words by one which the other does not understand, or from the intended implication of a shade or nuance of meaning which is not grasped. Questions requiring for an answer simple affirmation or negation should be avoided not only because they shift the burden of the talking to the interviewer but also because such answers are more readily misunderstood since they are interpreted in the interviewer's frame of reference. He may never be aware that the interviewee meant something quite different by his monosyllabic reply.

The problem of misdirected and unintentional suggestion may jeopardize the success of the interview. The interviewer should not directly suggest responses. By his inflection, by his choice of words, and by other signs, the interviewer unwittingly may lead the person interviewed to give a reply which the interviewer would like to hear, or a reply which is the socially acceptable response, or a reply which the very form of the question compels as an answer. For this and other reasons, the interviewee should be allowed to express himself freely and without interruption. The interviewer should practice the rather difficult art of listening. When it is necessary to interject a question or comment due to the obscurity of the material, the lack of relevant detail, the fact that the interviewee has run down, or the necessity for a tactful reminder that the conversation has wandered too far afield, it is desirable that this question be in an unequivocal, non-suggestive, non-leading form.

False inference traps the unwary in a variety of guises. It is well for the interviewer to apply the law of parsimony to his inferential activities. Inferences reaching the undignified level of hunches which fly in the face of the evidence are far too often wrong to allow one to exaggerate the importance of the occasional correct judgment reached by this method. There also appears occasionally a tendency to interpret as a general trait a characteristic observed from only one illustration of the presumed trait. If the interviewee behaves in a certain way in one situation, he does not necessarily behave in similar ways in other situations where the trait might be presumed to operate. Behavior and attitudes must be checked in other situations before inferences are drawn which are general in nature. Sometimes there is an exaggeration of the importance of a single trait so that some obvious feature is taken as symptomatic of all traits. The total picture is the important thing, not the presence or absence of some desirable or undesirable trait.

A form of false inference occurs because of the presence of stereotypes. We develop "pictures in our heads" concerning the physical appearance and expected behavior of individuals in some occupation, race, or social group, and then infer how individuals resembling our stereotypes in appearances will behave. The fallacy of stereotyping is closely related to another source of error; namely, the association of certain casts of countenance or certain facial features with particular psychological qualities. Manifestations of this tendency are not necessarily as crude as the presumed association of the bull dog jaw with determination; frequently they operate in a more subtle fashion.

Another form of false inference encountered in the interview is the so-called halo effect. Sometimes a favorable or unfavorable general impression results in forming a similar impression in regard to specific traits. In other words, specific judgments are made on the basis of general impression rather than such judgments being made on data relevant to that judgment. By the very fact of the unity of the personality there is some correlation in the traits of a person the effect of which should not be eliminated. The tendency, however, is to allow the general impression to sway specific judgments to too great a degree. It results in ratings which tend to be uniformly high or low. The question must be asked, "Is the general impression creating a specific rating or is each characteristic being evaluated independently of the others?" Awareness of halo, precise definition of traits, and adequacy of observation are means whereby this vitiating influence may be minimized.

Improving the Interview

The usual list of practical suggestions, the do's and don't's, of interviewing, err in minimizing the fact that both the pitfalls of interviewing and the techniques for their avoidance are expressions of the personality of the interviewer. Frequently this error results in giving mere lip service to the various *desiderata* of interviewing technique. The task of improving the interview is fundamentally that of improving the interviewer. A less personal approach to the task of improving the interview, and therefore one less likely to arouse emotional resistances to evidences of personal inadequacy, is to compare more successful interviews with less successful ones by attempting to localize the sources of the differences so that later their better features may be used. The interviewer should seek improvement in the development of specific habits and skills, not improvement in general interviewing ability. Analysis of details of method is therefore essential. Although the interviewer is not bound by specific rules, it is well for both the novice and the experienced interviewer to study the general techniques commonly conceived to be efficacious, since this sometimes helps them to avoid mistakes.

Research on the Interview

The interview when applied to the problems of guidance is an art, but in some measure the techniques of the interview are based upon scientific research. The fact that research in this field is neither extensive nor penetrating is due to the various factors which complicate the interview situation. Data are difficult to collect because specimen interviews, being unique, are impossible to obtain, because recording is difficult without changing the situation by the sheer presence of recording devices, because so many variables enter the situation that experimental control is difficult, and because criteria of success of the interview in terms of the future behavior of the interviewee are woefully inadequate or non-existent. Moreover, the various features that are hazards in interviewing are the same features that further complicate research. Symonds[10] describes some of these complicating features in terms of the factors which cause variation in interviewing results.

A considerable amount of the published research has dealt with the inadequacies of the interview such as defects due to unreliability, subjectivism, and the variability of the findings by different interviewers of the same person. Such research findings quite appropriately make us more cautious in regard to reaching sweeping decisions on the basis of the interview, and more aware of its limitations. Unfortunately, this offers little positive help since the conclusions reached in these studies are largely negative in character.

In the last few years the trend toward more positive contributions has been accelerated. The more recent interesting and significant contributions to research and to the methodology of research include those made by Rogers[9] who describes and defends a non-directive technique of interviewing, Porter[8] who develops and evaluates a measure of counseling interview procedures, and Covner[3 4 5] who in making studies in the phonographic recording of interview material reports on evaluation of procedures, structure of the interview, and the accuracy of report. Pertinent to an examination of research findings is the paper of Berdie[1] who describes the psychological processes involved in the interview stressing that of conflict solving.

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R. I. W.

IRELAND, VOCATIONAL GUIDANCE IN. The Secretary of the Irish Legation in Washington, D. C., after making inquiries at the Department of Education in Dublin, reports that there is no organized provision for vocational guidance in Ireland. A very successful system of vocational schools has been established, but the functions of these schools does not include guidance or advice.

O. J. K.

ITALY. The enormous destruction and disruption occasioned by World War II together with important changes in all phases of Italian life make it difficult to foresee the course which vocational guidance in Italy will take. However, practices which have been followed in the past will undoubtedly have an influence upon future developments.

Occupational counseling in Italy has been closely associated with the field of applied psychology. De Sanctis made important contributions to the measurement of occupational aptitudes and the vocational guidance of disabled soldiers after World War I; Gemelli worked on the selection of aviators; and there was a considerable amount of occupational analysis research carried on in psychotechnical laboratories. As in most of the other countries on the continent, there was also a close working relationship between vocational guidance and vocational education.

Before World War II, vocational objectives were given emphasis at every educational level. There were many bureaus and laboratories engaged in counseling work, being generally attached to technical and secondary vocational schools. There were also some communal institutes of vocational guidance.

Administration of guidance programs was largely in the hands of local agencies. There was no direct national control over such activities, nor were there special funds in the budgets of any of the ministries for occupational counseling. However, vocational guidance, like all other activities in Fascist Italy, was expected to serve the interests of the state.

In Italy a great deal of importance has been attached to the pupil observations and evaluations made by experienced teachers in shops and vocational schools. Many different kinds of questionnaires, aptitude tests, and intelligence tests have been employed, including some American examinations such as the Stanford Revision of the Binet-Simon Scale. Tryouts in various shops have proved useful in ascertaining interests and aptitudes. Occupational information has been disseminated through posters, pamphlets and other media. Courses dealing with the techniques and principles of vocational guidance have been offered in Turin, Milan, Rome and other cities.

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O. J. K.

J

JAPAN

A. *Introductory*

In order to understand adequately the present situation and the present system used in the field of vocational guidance in Japan it is necessary to know something of the historical background of the work.

Formal general education in Japan is of very recent date, even though the nation itself has a history of over 2,000 years. Most of the rapid advancement in education has come within the last fifty years as a result largely of contact with the rapidly developing western civilization. So heavily has Japan drawn upon the modern systems of European and American education, and so thoroughly and carefully has she selected the best elements from these and woven them into the Japanese national ideals, that today her national school system surpasses those found in some of the countries from which she has obtained many of her ideas. Immediately before World War II Japan's school system was thoroughly modern and efficient[3] and her per cent of literacy higher than that found in most of the great nations of the world. Of the total elementary school population over 99% were reported to be in school.

Vocational guidance, along with many other elements in Japanese education is of very recent development. From its beginning it has been closely tied up with the field of employment and with employment agencies. In fact, it must be considered as having developed from two sources: the Department of Education and the Department of Domestic Affairs which has as its agency the Employment Bureau. In 1906 the first Labor Exchange Office was established and was recognized as a public activity. As public interest was aroused the office grew in service and in 1921 a law was passed establishing the Exchange as a government activity. The next year the Education Department established its first lecture class in vocational guidance; and in 1927 created the National Association of Vocational Guidance. In this same year the Department issued instructions to all governors of prefectures to emphasize the development of individual personalities and the importance of vocational guidance. Rapid advancement was made when the Education Department and the Home or Domestic Affairs Department reached an agreement on a program and began to cooperate on a nation-wide scale.[6]

B. *Vocational Guidance as Related to Japan's General Philosophy of Education*

Japan has an all-inclusive national philosophy which affects every individual, every group, and every institution within the country. It is, that national honor, national loyalty, and national welfare take precedence over everything else. From childhood to old age every individual is taught and trained to put national interest before self interest. Youth learns early to sacrifice personal wishes, family wishes, and even the family's good, to the advancement of his beloved country.[3]

Over and over Japanese writers claim that Japan is just one big family, with the Emperor, who has descended from the gods, at its head. Every thought, every action of the whole Japanese people is purportedly guided by the principle "each for all and all for each."

Because of this national philosophy, the Emperor of Japan and the Japanese government have always assumed a paternalistic attitude toward all Japanese individuals, families, and institutions. National welfare, or advancement, or honor, is always the chief criterion by which policies are determined.

Vocational guidance has therefore become a national policy because it is seen to be for the national good. It is not a school policy, merely. Rather, vocational guidance in education is just a part of general guidance as carried on in many ways under the direction of the government, and according to the philosophy that a child is a stranger who needs guidance in both its human relationships and physical surroundings, and must be introduced to all resources in order to make the best of life.

C. *Vocational Guidance in Elementary Schools*

Since 1927 the movement in vocational guidance in education has been very active and increasingly extensive. This is especially true in the elementary schools. "Children between the ages of 12 and 13 are given advice about the most suitable kind of school to which they should proceed after finishing the elementary course. Children of 14 to 15, after finishing the higher elementary school course, are helped in finding the kind of work for which they are best fitted, and are advised concerning the attitude they should adopt towards their new work. Schools also help pupils to find employment and continue to advise them when they are in work.

"It is a common practice today for schools to give intelligence tests and to conduct experiments that will discover the natural aptitude and bent of young pupils. In many cases pupils are given opportunities to work in shops and factories for an experimental period, in order to test their aptitude. Visits of inspection are paid to various places that the pupils may become familiar with different kinds of employment and thus be enabled to choose the vocation best suited for them.

"The principle of vocational guidance, therefore, has acquired fundamental importance in our elementary schools and may be regarded as a landmark in our educational development."[5]

Vocational guidance activities in the elementary schools have been listed as follow:

1. Organization of classes for those applying for situations. Special teachers are appointed for these.

2. A special guidance section with officials or teachers in charge.

3. Studies of various occupations for purposes of comparison.

4. Visiting industrial plants and shops to familiarize pupils with occupational practices.

5. Giving information of opportunities for those going into higher education.

6. All sorts of testing to determine fitness mentally and physically for different occupations.

7. Seeking jobs and looking after welfare of students when work is obtained.[6]

D. *Vocational Guidance of Older Youths*

Vocational guidance in the secondary schools has not been developed extensively. Education has not been compulsory at the high school age, and most of the students attending high schools have been those who were going into government work or into the professions, and it was felt that vocational guidance for this group was not essential. However, with the growth of high schools and changes in social conditions, there is a movement to develop the guidance program in the secondary education field.

For the youths of high school age who are out of school, there has been a definite effort to furnish helpful vocational guidance. According to the Department of Education the out-of-school life of young people is under the direction of the Department of Education, "to give proper guidance to boys and girls in this out-of-school activity—by issuing instructions and notifications, the Department of Education is endeavoring, with the prefectural governments, to propagate and develop the measures taken for the guidance and direction of boys' and girls' out-of-school life." [1] The Department intends not to act as a traffic manager to jobs, but rather to furnish a liberal education to make students ready for giving service.

The fate of over 40% of the graduates of higher institutions in Japan in the matter of finding jobs is an evidence of the need for more definite planning in vocational guidance. There is an increase of college graduates who fail to find jobs. In 1937 the state of affairs was deplorable. According to a statement by Premier Hayashi the employment situation among college and university graduates was anything but satisfactory, though the government was intending to do something about the matter.[4]

Another feature of Japan's over-all guidance which affects many young men is the so-called "guidance in thought." For this work, up until 1937, there was a Bureau of Thought Supervision, one of nine chief government bureaus. The purpose of the bureau was "to prevent the unrest and agitation of students' and pupils' thoughts and to make their guidance and moral training more effective." [1] In 1937 the bureau was changed to the "Office of Educational Reforms," but under this new office is still found a division on "thought supervision." Back of this guidance of thought is Japan's fear of Marxism and Communism, and a determination to prevent these ideologies from getting a hold on her young people.

The "Chinese incident" and the growing concern over war brought new problems in Japan's program of vocational guidance. The General Survey of Education by the Department of Education, in 1937, states: "The increasing complexity of the social structure in recent years has brought about a marked difference and diversity in vocations, making it an important task in the education of our young men and women and boys and girls to help and guide them in the choice of employment and after they have found positions, no less than when they pursue their studies and when they seek work and employment. It is essential, therefore, that an educationally appropriate guidance should be given." [1]

Some of the pressing problems still to be solved in Japan's program of vocational guidance are listed by Ueno: [6] The extension of the work now being done in elementary schools to the secondary schools; the extension of after-care, especially in vocational re-education; legislation to protect juvenile workers and the reforms of the apprenticeship system; cooperation of labor and capital in promoting a better work attitude; adoption of educational measures for training youths in scientific methods in different fields; the problem of juveniles and immigrant children; vocational guidance for adults, especially women, now largely excluded from many occupations; and the securing of cooperation from medical men in better protection and service for workers.

When war was declared upon the United States and other countries, Japan's guidance program became a program of domination. Mobilization laws put men where they were needed. War called for skilled labor and technicians, and as a result liberal education practically crumbled. In 1943 conscription laws put all women from 14 to 25, and all men from 14 to 45 into war work or military service. In 1944 the upper age limits were changed: in the case of women from 25 to 45 and for men from 45 to 60. During the war therefore, vocational guidance, as it has been generally understood, practically ceased to exist in Japan.[2]

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H. L. S.

JAPANESE-AMERICANS. There are three groups of Americans of Japanese ancestry: Nisei, second generation (American-born citizens); Kibei, second generation (American-born citizens who returned to Japan for elementary and secondary education); and Sansei, or third generation (American-born children of American-born parents).

Before the war most Americans of Japanese ancestry lived on the Pacific Coast. The Nisei attended public schools and colleges and otherwise pursued a pattern of life common to second generation citizens. Upon completion of their formal education many entered occupations or professions supported largely by Japanese communities. This also was true of many Kibei who returned to the United States after receiving their elementary, secondary, and sometimes college education in Japan, to which place they were sent for this purpose by their parents. The Sansei comprised a small group of budding citizens who were found largely in preschool or primary grades in the schools of the West Coast.

Pearl Harbor and Relocation introduced most of these citizens for the first time to areas of the United States other than the West Coast. Initially brought together by the Army in large centers in Wyoming, Idaho, Colorado, Utah, California, Arizona, and Arkansas, administered by the War Relocation Authority, many took advantage of WRA's relocation program to settle inland and on the Atlantic Coast. A preliminary step took place in the centers themselves, where many embraced training opportunities to prepare themselves for employment "on the outside" in occupations important to the war effort.

To prepare center residents for center employment and for relocation, WRA conducted an extensive program of vocational training and retraining. Many hundreds of men and women, mostly Nisei, enrolled in over one hundred different courses (some conducted in cooperation with State Boards of Vocational Education), prepared for employment in essential agricultural, commercial, and industrial occupations. These courses were organized carefully to meet Center employment needs as well as employment opportunities on the outside. The United States Employment Service, the War Manpower Commission and other Federal, State, and local agencies advised WRA of employment needs in various parts of the country, many in activities important to the war effort. Nisei not inducted into the armed services eagerly sought employment in these essential industries. They wanted to share in the war effort as best they could.

Under the relocation program, many Americans of Japanese ancestry left the Centers for the large cities of the Middle West, South, and East Coast. On the basis of training begun in the public schools of the Pacific Coast and completed in the Centers, these persons secured positions in industrial, commercial, and agricultural establishments. Their fine spirit, performance, and general worth quickly won them the confidence and respect of co-workers and supervisors.

In the early days of relocation, many employers were unfamiliar with this group of fellow citizens. Frequently Nisei were employed because no other help was available. In a number of instances, after satisfactory experience with a single Nisei, such employers enthusiastically recruited additional Japanese-American workers. One large manufacturing concern in the Middle West eventually employed a Nisei as assistant to the personnel director with authority to devote all of his time to the recruiting of additional Japanese Americans for employment in the firm. A large food-growing and processing concern in the East sent a full-time representative into the Centers to induce both single individuals and families to accept employment with them.

Among the first to leave the Centers were the Nisei. After they had established themselves (in a real pioneer sense), they would return to the Centers and encourage their parents and friends to do as they had done. The more capable and alert responded. Those who remained were less qualified to carry on the work of the centers, or to relocate. Eventually this presented new and difficult problems for those charged with responsibility for Center operation, and increased the need for a program of adequate guidance for these people when they finally did leave the Centers for other places. Incidentally, as the Nisei left the Centers, the proportion of Issei (aliens) increased. Faced with language difficulties and a reluctance to enter new occupations late in life, many Issei were content to wait until the West Coast reopened and they could go back to their old occupations.

Today there are considerable numbers of Americans of Japanese ancestry in the cities of America. Personnel officers, employment interviewers, guidance counselors, and others who may find themselves in a position to influence occupational choices of these citizens during interviews should keep in mind the unusual experience of segregation and relocation through which all of these people have passed.

During interviews some will be timid. Some may undersell themselves. A girl who would make an excellent stenographer or typist might minimize these potentials. A Nisei boy may understate his qualifications and experience and as a result get into work which would not utilize fully his true capacity.

Generally, vocational guidance counselors approached by Americans of Japanese ancestry will find themselves talking to Nisei. These young people are the same as other young Americans of the same age and background. They have been through American grade schools, secondary schools, and colleges. They are completely at home in the American environment. Many have slight if any contact with Japanese culture. Few understand the Japanese language. They are thoroughly American; energetic, capable, likeable, and industrious. All they ask is an opportunity to show what they can do.

These Nisei bring to the labor market skills and aptitudes of a high order. They are thorough and accurate. They are capable of accepting responsibility. They possess initiative and alertness. They get along well with other people. They are thoughtful and considerate.

They possess a high degree of manual dexterity. They excel as workers in laboratories and similar situations. They make fast, accurate typists and stenographers. They make excellent mechanics and technicians. Those with specialized training on the college level excel in the areas in which they have completed training.

Socially our Nisei fellow-citizens are sincere, pleasant, and reserved. This reserve stems from a natural sensitiveness possibly heightened by the events of the past five years. They appreciate thoughtfulness on the part of others, and respond with a durable loyalty.

Towards these people the vocational guidance counselor should extend the same services as would be extended to other groups of American citizens. There is nothing "special" about these, our fellow Americans. Generally, they are interested in the skilled trades, semi-professional, and professional occupations. They are not interested in unskilled or semi-skilled labor. They seek positions which have a future, and which pay a rewarding wage or salary.

As indicated above, during the war, hundreds of Nisei left the relocation centers and settled in the larger cities of the country. Through the efforts of WRA's Relocation Division, the United States Employment Service, and community organizations, these young people were employed in positions essential to the war effort. Quickly they won the friendship and respect of those with whom they worked. They were praised for their integrity and effort, their enthusiasm and for their job performance.

Americans of Japanese ancestry are the same as Americans of any other ancestry. Some are not able to contribute to the community. The great majority are sincere, capable, eager. They seek the rewards for which all of us strive. They carry an extra burden. They have a great deal to give to the United States. They want to make their contribution. They look to America, *their* America, to give them their chance.

Mr. Ralph Othmer, WRA Director of Vocational Training and Adult Education at the Gila River Project in Arizona suggests a final thought:

"One thing needed by our Japanese-Americans, above others, is the responsibilities of citizenship; to be treated as all Americans have the right to be, as equals in citizenship and with the expectation of a right response to such treatment.

"With the responsibilities of citizenship will come the feeling of dignity and well-being which is the heritage of all Americans and of this reaction will not be lacking in these people. So the first requisite in any persons delegated (either self or by appointment) to aid these people be they social workers, teachers, counselors, or in whatever capacity, is the ability to treat them as equals in citizenship. Practically without exception the response will be with self confidence and poise and the seeming inferiority complex will quickly disappear.

"A counselor should never be a novice, but one who is wise and of wide experience in human relations. He must be friendly but not familiar, interested but not inquisitive, sympathetic but not sentimental. For these people are suspicious and will not be patronized, rather will they pretend inferiority than to put themselves in a position from which they must retract."

R. B. J.

JAPANESE-AMERICANS IN WAR RELOCATION AUTHORITY CENTERS. The War Relocation Authority as established by Executive Order No. 9102 was directed in March 1942 to provide for the care and relocation of 110,000 persons of Japanese ancestry excluded by military order from the Western Defense Command area. Ten relocation centers were established in Arizona, Arkansas, California, Colorado, Idaho, Utah and Wyoming.

In these centers evacuees composed three groups: Nisei, citizens by birth educated in this country; Kibei, citizens by birth but educated in Japan (13%); and Issei, persons born in Japan, therefore ineligible for citizenship under our alien exclusion laws.

Prior to evacuation both Nisei, Kibei, and Issei were employed on the West Coast in a wide range of occupations. Over 15,000 persons had been associated with farming activities. Other occupational pursuits included proprietors, managers, and officials of business enterprises; clerical and sales work; employees of food and dairy products stores; and domestic workers.

Until January 2, 1945 the War Relocation Authority was charged with the responsibility for relocating as rapidly as possible loyal persons of Japanese ancestry from these centers to communities elsewhere in the country exclusive of the Western Defense Command. Since January 2 the West Coast ban has been lifted and relocation now can be accomplished anywhere in the country.

The pre-evacuation occupational pattern of these people plus the responsibility of the War Relocation Authority for relocating them in new communities made necessary a program of vocational guidance which had to be carefully organized and effectively administered.

Generally this program of vocational guidance served two groups: (a) in-school Nisei, especially high school students who upon graduation or even before, on a part time basis, were employed in clerical, agricultural, industrial, or homemaking occupations in the centers or through relocation found employment in these occupations outside, and (b) out-of-school youth and adults including Nisei, Kibei, and Issei.

The in-school program was developed by the Education Section of the Division of Community Management. It followed accepted practices and included practical arts and pre-vocational courses in appropriate industrial, commercial, agricultural, and homemaking subjects. Film strips, sound motion pictures, and other visual aids were used to introduce and explain occupations and to familiarize students with the geographic, economic, and social aspects of the United States. Qualified persons from the appointed staff, from among the evacuees, and from neighboring communities appeared from time to time before student groups for the purpose of speaking to students and their parents on these and related topics.

Wherever possible school subjects both on the elementary and secondary levels were correlated with Relocation. In addition high school students were urged to attend after school and evening meetings held from time to time by the Community Activities Division. At these meetings selected speakers gave illustrated lectures or conducted informal conferences on subjects having to do with vocational preparation for relocation and eventual employment on the outside.

The program of vocational guidance for out-of-school youth and adults was extensive and continuous. Every method and device was employed to present information about the United States and its occupations. Relocation was the common denominator throughout.

Agencies other than WRA participated. Included were the United States Employment Service and the War Manpower Commission. The Relocation Division of WRA continuously brought to the attention of the evacuees employment opportunities in various sections of the country.

These employment opportunities frequently permitted evacuees, upon relocation, to reenter occupations which they had pursued originally. Many, however, did not wish to reenter old occupations, but hoped, instead, to enter other types of employment which had become attractive. For both of these groups WRA maintained in each center extensive facilities for pre-employment and in-service training in agricultural, commercial, industrial, and homemaking occupations.

In all centers vocational training prepared both for center employment and for relocation. Most training was financed by WRA funds. In addition state boards of vocational education in Idaho, Utah, Arkansas, and Arizona approved plans for training with emergency funds made available to the state boards by the U. S. Office of Education.

Vocational training was available to men and women on all centers through day and evening courses. Over 100 different courses prepared for employment in agricultural, commercial, industrial, and homemaking occupations. These courses ran for varying periods of time and in all instances were based upon an analysis of employment requirements on the centers and outside, and provided training in fundamental skills.

Training was given in school shops and in operating facilities throughout the centers. Agricultural students worked in the fields, tended the large herds and flocks, maintained farm equipment, irrigation, etc. Clerical trainees worked full time or part time in center offices, developing skill in the operation of business machines, in shorthand, typing, general clerical work, etc. Trade and industrial students worked in the motor pools, in the various maintenance shops, engineering offices, and on construction crews. Others entered training in the hospitals, mess halls, community centers, and similar installations throughout the centers.

Four types of training were available (1) High school vocational, (2) Learnerships, (3) Part-time adult, and (4) Full-time adult.

High school vocational courses provided training which resulted in school credit and eligibility for full time employment either in center activities or in positions obtained after relocation.

Learnerships provided for the full-time employment of trainees in center activities at the Learner rate of $12.00 per month. Trainees were rotated through basic operations and spent approximately 25% of the time in organized instruction related to their work.

Part-time adult training made it possible for persons employed during the day to enter training programs during hours when they were free. This training made it possible for them to advance in their present occupation, or to prepare either for transfer to another occupation or for entry after relocation into chosen occupations for the pursuit of which training had been undertaken.

Full-time adult training took the form of controlled in-service, on-the-job training for persons employed on the centers at the full rate of $16.00 a month.

In all training, instruction was given by qualified persons.

Courses had the prior approval of the Washington Vocational Training Committee and in all instances where school credit resulted courses met the requirements of the state in which they operated. These courses were organized carefully and in all instances were approved by the center Vocational training committee in terms of direct contribution to center employment and relocation. Membership on the Washington and the center vocational training committees included key personnel from the operating divisions, the education section, and the relocation division. On each center immediate responsibility for the vocational guidance and preparation of evacuees was vested in the Vocational Training Supervisor, who also served as executive secretary of the center vocational training committee. Overall direction of the program emanated from the Education Section in Washington.

Persons completing training were awarded Certificates of Completion. These certificates identified the clock hours spent in training, specific operations and processes covered, and the degree of success which the learner had achieved in developing required skills. The certificate of completion was of help when, upon relocation, the student reported to the United States Employment Service. Completion of training also was recorded in the student's personnel record.

In addition to these formal courses the Community Management Division and the Relocation Division cooperated in continuing center-wide programs which brought to the attention of the evacuees employment opportunities on the outside, requirements for entrance, and other information which would help them to plan effectively for their return to communities throughout the country.

Under WRA procedure it was possible for evacuees to leave the centers for seasonal employment in approved activities outside. Over 29,000 departures have been made from all of the WRA centers at one time or another for the purpose of securing this seasonal employment. This figure does not represent *persons* on seasonal leave, but *departures* from the centers for work outside. Some evacuees have gone out on seasonal leave as many as four times. The Statistics Division of WRA has no means of determining the actual number of individual persons using seasonal leave. Upon their return to the centers, the evacuees frequently undertook further training in the occupation in which they had been employed while on seasonal leave.

In summary, every effort was made by the War Relocation Authority to provide vocational guidance for persons in these relocation centers. This vocational guidance was organized, adequate, and made a direct contribution to relocation. The evacuee was helped to select objectively a type of work for which he was fitted and which he would like to pursue upon relocation. He then was given every assistance in developing skills which would prepare him for employment in the occupation which he had chosen. Finally, in addition to preparation for the regular occupation, the evacuee was urged to develop skills which he could use if there developed a need for a spare time job.

R. B. J.

JEWISH-AMERICANS. The goals of vocational guidance for Jewish persons are basically the same as those for members of the general population. However, because of their status as a minority group, Jews encounter difficulties in their vocational adjustment over and above those occupational problems which usually confront most persons. Therefore, an integral part of the aims of vocational guidance for Jews is to assist them in compensating for the occupational handicaps which they may face because of their Jewishness.

The vocational problems of Jews can be better understood after an examination of their historical background in American life and of their present economic and occupational status.

Background

The Jews who emigrated to the United States in the late nineteenth and early twentieth century, and who constituted the bulk of Jewish immigrants, were largely an urban people with middle class traditions. For the most part, they had been small storekeepers, artisans and handicraft workers, and semi-professionals. While a few (less than is popularly believed) turned to peddling, and subsequently established their own retail stores, the overwhelming majority went into the "sweat shops" of the large Eastern cities. Many, after learning the language, and acquiring new skills and a small amount of capital, opened their own businesses. Their children in turn, were encouraged to fulfill their parents' aspirations toward attaining a higher economic level in a land of opportunity. In this respect, the pattern followed by Jewish youth resembled that of most American youth, particularly those of foreign-born parentage. Jews have tended to enter those occupational fields which have shown the greatest expansion in recent decades; hence the trend in Jewish occupational distribution has paralleled recent developments in the American economy as a whole.

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Some misconceptions exist about the suitability of Jews for certain types of occupations. Similar "stereotyped" notions are prevalent as well about the abilities and aptitudes of other minority groups in America. For example, one such common belief holds that Jews are not mechanically inclined, and "cannot work with their hands." Another false notion is that there is something peculiar to, or inherent in, Jews as a group which fits them particularly well for work as business men or professionals.

These stereotyped characterizations of Jews have no basis in fact. Psychological and anthropological data reveal that the distribution of abilities and aptitudes in the Jewish group corresponds closely to that of similar groups in the general American population. Since Jews are primarily an urban group, the distribution of their abilities might be expected to be similar to that of other urban groups. Scientific inquiries reveal that this comparison is valid; individual Jews have been outstanding in work with their hands, while conversely, other Jews have failed completely as businessmen and professional workers. A wide range of individual abilities appears to exist among Jews; there is no scientific evidence for asuming either that Jews are not fitted for certain occupations or are peculiarly endowed for others.

Perhaps the concentration of many Jews in certain occupations has been partly responsible for some of the prevailing misconceptions about their abilities. As with other minority groups, the occupations in which Jews are actually engaged do not so much reflect their innate capacities as they mirror a combination of the barriers to free choice of occupations, on the one hand, and the background and traditions of the group, on the other. This point can be further illustrated by the fact that each ethnic group in American life shows a pattern of concentration in certain occupational areas, and that the pattern of occupational distribution of no group conforms exactly to that of the general population. An analysis of Jewish occupational distribution, if accompanied by an examination of discriminatory barriers to employment and training, illuminates the problems in vocational guidance for Jews.

Occupational Distribution

The United States Census does not identify religious groups in its occupational breakdowns; and no precise data are available from other sources regarding the occupational and economic distribution of Jewish persons in the United States. A few studies of the Jewish population in various cities, however, seem to confirm the opinions of informed observers that Jews are concentrated in certain occupational fields. Since there are virtually no data on the changes in Jewish occupational distribution during the war period, the following generalizations characterize the situation prior to the war.

Before the war, between 35% and 45% of all gainfully employed Jews in the United States were engaged in trade—wholesale and retail sales and distribution. Fifteen per cent to 20% were employed in manufacturing, approximately 15% were in clerical occupations, and 10% to 12% were in professional occupations. There were comparatively few Jews in transportation and communication, in mining, and in agriculture.

Even within the broad fields in which they were most heavily represented, Jews tended to concentrate along certain lines. For example, the Jews engaged in trade were largely concentrated in retail trade, dealing with food, apparel, furniture, and drugs. In manufacturing, the concentration was in consumer goods industries, such as clothing, furniture, printing, and food. Among the professions, Jews were most numerous in the independent professions, such as law, medicine, dentistry, and pharmacy.

However, any of these generalizations may not have obtained in a particular locality, since there was variation in the occupational distribution of Jews from community to community. In industrial communities, like Detroit and Passaic, for example, more than one-fifth of the Jewish working population were engaged in manufacturing, whereas in some of the smaller communities there was likely to be greater than 50% participation by Jews in trade.

A question correlated with the analysis of the occupational distribution of Jews is the extent to which Jews "control" certain sections of American industry and business. In 1935, the editors of *Fortune Magazine* studied this question, and came to the conclusion that Jews played an inconspicuous rôle in the American economic scene. In banking, insurance, mining, the steel, auto, rubber, petroleum, chemical, shipping, and transportation industries, and in the press, Jewish predominance was negligible or non-existent. Jews had a secondary influence in retailing, and were somewhat more influential in radio and cinema. Only in the clothing industry could Jewish interests be said to be predominant, and this concentration was related to the historical background of the Jewish group.

Sixty per cent to 80% of Jews were wage-earners. Among those who were not salaried employees, there were many who were self-employed or engaged in independent professions.

The trend in the occupational distribution of American Jewry appears to be a movement from the factory and the store in which the foreign-born Jews are found to the white collar and professional openings sought by their native-born children.

Discrimination

The occupational distribution of Jews is conditioned to a great extent by the availability of opportunities. Restrictions to full and free choice of an occupation, imposed by discriminatory barriers, compel Jews to seek careers in fields where there is little or no discrimination. The inevitable result is that Jews prepare for, and concentrate in, a relatively limited number of occupations and professions. Individual Jews, who appear to be suited for a variety of occupational fields, are often excluded from occupations in which Jews are not already concentrated either because of actual discrimination or because of failure to prepare for jobs in which discrimination was believed to exist, although in fact some opportunities may have been available. Occupational concentration and unequal job opportunity are thus closely inter-related, with the former often an accumulated result of the latter.

The extent of employment discrimination against members of minority groups, including Jews, varies directly with the extent of unemployment. Although Jews are not completely barred from most occupations, there are individual employers in virtually every community who will not consider Jewish applicants for employment. The incidence of discrimination varies from place to place; discrimination may be widespread in a particular occupation or industry in certain communities, but may be almost non-existent in the same occupation or industry in another community. During the war period, many employers, formerly reluctant to hire Jews, have done so because of labor shortage and government persuasion; whether they will continue war emergency policies in the more "normal" postwar labor market is uncertain. And even during the war period, almost 10% of the complaints received by the Federal Fair Employment Practice Committee came from Jews.

Although no precise measures of discrimination are obtainable, barriers against the employment of Jews appear to be most marked in: the larger corporations, particularly those of a semi-monopolistic nature, such as the public utilities; insurance companies (except for salesmen and agents); railroads; salaried professions (such as engineers and chemists—and teachers, especially in small communities); and heavy industry.

Jews seeking professional careers, because of discrimination in salaried positions, frequently are compelled to select the independent professions where it is possible to develop a clientele rather than to rely upon the lack of prejudice of a prospective employer. Even in the independent professions, however, there are difficulties. Jews interested in medical careers often find discriminatory barriers to enrollment in grade A medical schools or to interneships or staff appointments in hospitals. While Jews frequently enter the field of law, they are rarely associated with the larger law firms which have the more substantial legal practices.

Vocational Guidance Approach

The basic remedy for the occupational and vocational problems of Jews, and for those of members of the other minority groups, would be full employment in the country as a whole, and its corollary, the elimination of employment discrimination, which would permit a free and unhampered choice of occupations. The value of vocational guidance for Jews is not as a panacea for basic economic problems confronting Jews; rather it is a means of assisting the individual Jew to meet his occupational problems given limits imposed by the patterns existent in American life.

In professional vocational guidance circles, the occupational problems of Jews are approached on the basis that individual differences exist among this group, as among all other groups. Therefore, Jewish individuals are helped to select a career in accordance with their abilities and interests, as related to job requirements, and with a view to overcoming, if necessary, discriminatory obstacles. Since there are many Jews with aptitude for occupations other than the traditional types in which the bulk of Jews are now engaged, efforts are made to "broaden the occupational horizon" by giving them information about many types of jobs, which they might have previously considered closed to them, or with which they might not have come into contact. In this way, new interests may be developed. On the other hand, individuals who show marked potentialities for occupations in which Jews are already concentrated are not dissuaded from such careers because there are already "too many" Jews so engaged.

A difficult question encountered in the counseling of Jewish persons is the course of action to be followed if the individual desires to enter an occupation in which, at the time, discrimination is clearly evident. One viewpoint is that the counselee should be discouraged from following his choice, on the assumption that his training will be wasted, and that he will be frustrated in finding adequate placement. Another position holds that the counselee should not be diverted from his plan, since to do so would tend to encourage and perpetuate a system of artificial and undemocratic restrictions. The more generally accepted practice is that the counselee is not discouraged if he persists in his ambition after having received a realistic understanding of the discriminatory obstacles he will meet; there have always been some persons who are sufficiently gifted to succeed in a career despite the greatest difficulties. In addition, the extent of opportunity in any occupation may vary from time to time; in the war-time labor market, for example, opportunities hitherto closed have become available to members of minority groups. In general, if the Jewish individual is encouraged to make the best possible choice, in accordance with his own abilities and drives, Jewish persons will be available to take advantage of such opportunities when they occur.

The counselor serving Jews needs to understand the group, its background and current problems, and to be sympathetic to its needs. In dealing with Jewish applicants, the counselor strives to help them compensate for the handicaps facing Jews, and thus to equip them to be on a more nearly equal basis with the "average" person in the labor market. Specifically, the techniques usually employed include: (1) selection of the most appropriate occupation or occupations in order to guarantee optimum suitability and opportunity; (2) the giving of information, to the extent that it is known, or can be obtained, about discrimination in the occupations considered; (3) preparation for the shock of discrimination in order to avoid personal bitterness or demoralization; (4) assistance in obtaining the best possible training and preparation; (5) assistance in planning job seeking most carefully; and (6) encouragement to make the best possible performance on the job.

Jewish Vocational Services

The absence of any vocational guidance facilities in many communities and the unsuitability or inadequacy of existing public, or private, vocational services to deal with the special vocational problems of Jews has led to the establishment of Jewish vocational service programs. The earliest programs were organized at the end of the 19th century to meet the needs of Jewish immigrants. When immigration was considerably reduced following World War I, the Jewish agencies, in the decade of the '20's, turned their attention to the marginal and virtually unemployable group. During the 1930's, when the depression increased the need of the entire Jewish community for vocational service, the number and quality of services offered were substantially raised. During the period of World War II, the Jewish agencies have been concerned largely with augmenting and strengthening the war-time labor force by recruiting Jews for war jobs; assisting Jews "displaced" from their regular employment by war-time conditions; and rendering those services required in a war-time labor market, such as for example, "on the job" adjustment.

In approximately 100 local Jewish communities, agencies are today providing one or more of the following services in occupational adjustment for Jewish persons: individual vocational and educational counseling, group vocational guidance, job placement, anti-discrimination programs, occupational research and information, vocational training, and loans and scholarships for educational or self-employment purposes. The auspices of the local programs vary from community to community. Among those sponsoring programs of this nature are "YM and YWHA's," or Jewish Community Centers, family case-work agencies, local Jewish Federations or Community Councils, and local constituents of national Jewish organizations. In addition, in the nineteen largest Jewish communities in the United States and Canada, autonomous Jewish vocational service agencies have been established.

Fifteen national Jewish organizations are currently engaged in assisting the local vocational service programs for Jews. The activities of the national agencies include: promoting, organizing, and sponsoring programs in local communities; coordinating and clearing programs and activities; doing research and issuing vocational literature; working with special problems such as guidance for emigres or the settlement of Jews on farms; and combating discrimination in employment. These organizations are: American Jewish Committee, American Jewish Congress, American ORT Federation, B'nai B'rith Vocational Service Bureau, Conference on Jewish Relations, Council of Jewish Federations and Welfare Funds, HIAS, Jewish Agricultural Society, Jewish Labor Committee, Jewish Occupational Council, National Community Relations Advisory Council, National Council of Jewish Women, National Jewish Welfare Board, National Refugee Service, and Union of American Hebrew Congregations.

Further information about the local and national Jewish organizations engaged in occupational adjustment programs may be obtained from the Jewish Occupational Council, 1841 Broadway, New York 23, N. Y., which is responsible for the coordination of the programs and activities of all Jewish agencies dealing with economic adjustment.

The twenty autonomous Jewish vocational service agencies, mentioned above, constitute perhaps the most important segment of the day-to-day effort for Jewish economic adjustment. At the peak level of volume of operations (1941), their combined active files totalled 20,000 applicants; in that year, the agencies received applications for service from 50,000 persons, and filled 40,000 jobs. These Jewish vocational service agencies are usually sponsored by the Jewish Federations of the local community. They offer a comprehensive vocational adjustment service to Jews and, occasionally, to persons who are not Jewish when the general facilities for guidance in the community are inadequate.

At the present time, the special attention of the Jewish vocational services is being given to the problems of veterans, displaced war workers, youth (both in-school and out), and marginal workers. Psychological testing, research on vocational problems, and follow-up are an integral part of the operation of these agencies. Their staff members have been selected on the basis of professional competence, and high standards of performance are required from all agency workers.

These Jewish vocational service agencies have established a pattern of cooperation with voluntary and public agencies which are serving the vocational needs of the general population. During the war period, for example, the War Manpower Commission delegated authority to these agencies to carry out various provisions of the employment stabilization program. In some communities, demonstration projects have been conducted with the public schools. Cooperation has been developed in many communities with organizations and groups serving veterans. The Jewish vocational service agencies have not only provided a source for the individualized vocational services which are frequently not available under public agency programs; they have also cooperated with other groups, both public and voluntary, for the purpose of developing and strengthening vocational guidance programs in the community as a whole.

Postwar Outlook

During the reconversion period following victory in Europe and Japan, most Americans will find it necessary to make some new adjustments to the world of work. However, in the period of relative stability after reconversion to a civilian economy, the nature and extent of the needs of Jews for vocational guidance will be determined by a number of factors, such as general occupational trends, the degree of domination of the American economy by large corporations, the availability of government jobs, and geographic shifts in the location of the centers of industry. The need of Jewish persons for vocational guidance can be expected to be less acute, for example, if occupational trends resemble those of the pre-war period. If small enterprise, in which many Jews are engaged, is able to play a more important rôle in the American economy, or if government jobs, which have been relatively free of discrimination, continue to be available in the numbers of the war period, or if the geographic shift of industry away from the urban centers in which Jews are most heavily settled is halted, Jews will need less assistance in making an adequate economic adjustment. If, however, the opposite trends appear, the needs of Jews for vocational guidance will become more widespread, and the nature of their problems intensified.

In the final analysis, the economic security of any group may be regarded as the basic index of its need for vocational guidance. And the economic security of American Jewry, and other American minority groups, is dependent on the type of economic and political situation which prevails in the country after the war. The vocational adjustment of members of all minority groups will be immeasureably strengthened by the achievement of full employment, the elimination of discrimination, the attainment of equality of economic opportunity, and the general promotion of democratic principles and practices.

E. E. C. and S. J. S.

JOB DESCRIPTIONS AND JOB ANALYSES. The goal of vocational education is to equip an individual to perform adequately in some vocation or profession. Our educational planning at both the high school and collegiate level is moving swiftly in that direction in spite of the attempts of some educators to maintain the "status quo" of liberal education. War experiences have taught us much about the lack of facility for doing a specific job by those who have had a liberal arts education.

The desire for so-called liberal education will diminish as skilled jobs in contrast with the professional jobs command higher salary levels. This trend is very evident at the present time. The day of obtaining a college degree to secure a filling station job is about over. Perhaps the degree will still be demanded by employers but it is to be doubted whether many students will be willing to secure that level of education for such work. If the trend in the direction indicated is to continue, then some means must be found for directing individuals into channels offering the most in job opportunities that are appropriate for the abilities and skills of a large mass of the population. It will be necessary, therefore, to begin this segregation in the public school system. Attempts have been made and are being made in many of our larger school systems to give vocational guidance to youths so that many years of vital training will not be wasted. Whether vocational guidance is successful or can be successful at early age levels is a question. However, it should be stressed that if vocational guidance at any age level is to be successful, then the more knowledge we possess of job requirements, the more likely will guidance be of value.

It is extremely unfortunate that job descriptions and job analyses have not been made for all jobs in all industries, but at least a good start has been made by Shartle and his co-workers under the auspices of the Federal Civil Service Commission.

Many large industries have prepared similar analyses for their particular fields, although these are not generally available to counsellors. It is fairly obvious that unless counsellors or vocational advisers know about job requirements they will be unable to decide whether a particular individual has the necessary skills and aptitudes for a particular vocation. Let us examine the facts usually contained in a job description. Whereas job description and job analysis are closely related, we shall define job description as that part of the analysis that contains the following information: (a) duties, (b) nature and conditions of work, (c) machines used, (d) training requirements, (e) promotional opportunities and allied jobs, (f) advantages and disadvantages of a particular job.

The foregoing facts are not subject to controversy but represent a straight forward account of things that the individual does and the conditions that he encounters in his work. When we take the next step and consider the other factors that are frequently listed in job descriptions we are then dealing with job analysis proper. What are the qualifications for the work in question? The factors that then enter into consideration are: (a) age, (b) sex, (c) race and nationality, (d) height, (e) weight, (f) vision, (g) hearing, (h) strength, (i) education, (j) experience, (k) temperament of personality.

How many of these factors have been appraised in relation to jobs? What age group is most successful as a mechanic; a salesman; a teacher; or an engineer? Even if we knew the answer, of what value would this be in advising youngsters? Sex differences in general are relatively minor from a practical viewpoint, yet prejudices in hiring are of the utmost importance. The war has taught us that women are about as successful as men on most jobs, yet until some definite policy of hiring is established for the future, very little use can be made of this point in vocational advisement. In general, the situation with respect to race and nationality is subject to similar prejudices; witness the fight over the Fair Employment Practices Act. Height and weight have not been found to correlate highly with any particular vocation or job. Vision and hearing are relatively easily measured but it is open to serious question whether predictions can be made except in isolated cases concerning the loss of these functions at later ages. These factors would, of course, be of great significance in dealing with adult cases. The last three items (education, experience and personality) are the ones that are greatly stressed in most job analyses, yet these items are the ones about which the least is known with relation to job placement. Both education and experience are usually stated in unequivocal terms but all too often how much of either one is actually necessary is not known. High turnover rate in various jobs has been shown to be produced by excessive educational requirements. Similarly, attempts to limit the number of skilled craftsmen in various kinds of work have led to the setting up of experience standards for becoming journeymen which are out of proportion to the time required for mastering the jobs. With respect to personality, systematic studies covering a wide range of jobs have not been made that will enable us to state the type of personality that will succeed best in a specific job. The point that is emphasized here is that indiscriminate standards for education, experience, and personality now embodied in many job analyses may lead to erroneous vocational advice.

Since a large portion of vocational advice must be given to people who do not already possess educational requirements and experience, other approaches to job requirements must be made in terms of aptitude underlying the job. This has led to the appraisal of jobs in terms of the psychological components required. The job psychograph as presented by Viteles will clarify this method.

This method postulates that we can estimate or measure accurately the psychological components that enter into the job. Whether this method proves satisfactory depends upon the accuracy of these measurements as well as upon the reliability of the components in actual job performance. For example, in attempting to discriminate between accident prone and non-accident prone car drivers, such criteria as reaction time, reasoning ability, hearing, strength, judgment of speed and distance, and attitude toward traffic situations have been measured. Most of these job components, with the exception possibly of attitudes toward traffic situations, can be *accurately* measured. Unfortunately, these factors do not discriminate satisfactorily between the groups. There must be, therefore, other items of a non-physiological nature that are of greater significance, which have not appeared in the analysis.

JOB PSYCHOGRAPH

Job: Quiller
Department: Cotton Winding

	1	2	3	4	5	Remarks
1. Energy		X				
2. Rate of Discharge	X					
3. Endurance			X			
4. Control			X			
5. Co-ordination A				X		
6. Co-ordination B		X				
7. Initiative			X			
8. Concentration		X				
9. Distribution (of attention)					XX	
10. Persistence					XX	
11. Alertness				X		
12. Associability		X				
13. Visual Discrimination				X		
14. Auditory Discrimination		X				
15. Tactual Discrimination			X			
16. Kinaesthetic Discrimination			X			
17. Space Perception	X					
18. Form Perception		X				
19. Accuracy	X					
20. Visual Memory	X					
21. Auditory Memory	X					
22. Kinaesthetic Memory	X					
23. Understanding		X				
24. Understanding Q		X				
25. Observation					XX	
26. Planfulness	X					
27. Intelligence			X			
28. Intellect		X				
29. Judgment	X					
30. Logical Analysis	X					
31. Language Ability	X					
32. Executive	X					

In hand sewing, acuteness of vision, speed of movement, length of arm and fingers may be the determiners of efficiency; however, when rate of production is studied, psychological factors as yet unspecified are more important. It is these factors about which more knowledge is needed, if vocational advice is to be reliable.

We mentioned earlier that the job analysis should contain information about lines of promotion to higher grade jobs. This statement implies that the immediate job is only a rung in a ladder. If the individual expects to progress up the ladder, vocational advice must be given which takes into consideration the highest rung that can be reached within the capacity of the individual. The ultimate goal, rather than the immediate goal, must be the focus. For that reason, some authorities feel that advice must be along general lines. In addition, training facilities are likely to be general rather than specific. Airplane mechanics are likely to be trained in over-all maintenance of aircraft engines, rather than in the maintenance of carburetors.

Proposals have been made that jobs be grouped in families (that is, those jobs that have similar basic skills) or in accordance with basic psychological requirements. In the latter instance, jobs would be broken down into four or five major categories, such as unskilled, semi-skilled, skilled, business and professional. The first of these jobs would require dexterity of a gross nature, with very limited reasoning ability; the second group would require a higher degree of dexterity, with a slightly higher degree of reasoning ability; the third would require perhaps the maximum dexterity with a fairly high level of reasoning ability and the last two would require limited dexterity, but still higher degrees of reasoning ability. There would be, of course, many exceptions to this general breakdown. For example, a surgeon might have to possess exceedingly high degrees of both dexterity and reasoning ability. The above approach has been found satisfactory in certain types of business but leaves out of consideration a variety of psychological characteristics, such as character and personality. This method of classification could be used as a crude sorting device for levels of dexterity and levels of mental ability insofar as these would limit the progress and development of the individual. It would not be useful for selecting from among the various skilled occupations the one for which the individual possesses both aptitude and interest.

The matter of grouping occupations along family lines has been successfully employed in converting people from peace production to war production and back again, as well as placing civilians in their proper niche in the army. Ward in "Occupational Counselling Techniques" shows this relationship in two job situations:

(a) Jobs requiring high degree of finger dexterity: cherry pitting, key-punch-machine operator, key-actuated-calculator operator, hand embroidery, watchmaker, typesetter, automatic-tea-packaging line attendant. (b) Jobs requiring a high degree of sense of taste: tea taster, wine taster, production superintendent of bakery, corn flakes man, certain kinds of food purveyors.

This method of classifying jobs into families has a high degree of utility for mobility of workers but has its limitations for use in vocational advice since the wider range of requirements for the jobs in question becomes increasingly difficult to match.

It is a well known fact that the higher the degree of specialization in terms of training for a job, the more difficult it becomes to shift from one type of classification to another.

It is the opinion of the writer that validated job analyses are essential tools for vocational guidance but that unvalidated analyses are not only worthless but misleading. Job analyses are more useful in dealing with adult cases than in school guidance since in the time between advisement and employment, many changes in the characteristics of the job may occur. This is exemplified in the job characteristics of machinists. Due to job simplification techniques, many so-called machinists are today nothing more than machine attendants. Since job simplification is likely to increase in the future, many individuals who are trained with the expectancy of handling a complicated job may find that the need for such training no longer exists.

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R. M. D.

JOB QUALIFICATION INVENTORY. This inventory, constructed by Keith Van Allyn, gives promise of being one of our most valuable tools in vocational guidance. It is not a test; it is an inventory of facts about the individual. It investigates interest and ambition but it goes beyond those to training and experience. This matter of checking not only on stated interests but also on verified interests is the unique contribution of this instrument.

The inventory investigates every detail of an individual's qualifications and displays these details in the form of a graph to show their relative importance. There are six questions on each of thirty-five groups or areas of occupational activity. The six questions asked are:

1. Do you enjoy it?
2. What proof can you give that you enjoy it?

3. Have you sought training in that area?
4. Have you ambition for a life work in that area?
5. Have you paid experience in the work?
6. Have you received any special recognition for competence in the work?

The student or employee answers "yes" or "no" to each of the six questions in each of the thirty-five groups. The inventory is scored by noting the number of "yes" scores in each group or area. The number of "yes" scores is transferred to the profile on the front of the inventory. The counselor is guided by the indications of the profile. If the counselee is an adult who has had training and subsequent satisfactory work experience he will have four or five (and even six) "yes" scores in certain areas of work. If the counselee is a student with no work experience he will not be able to have five or six "yes" scores; he may have an occasional score of four. Those students who have worked may have five or six "yes" scores. Three "yes" scores are indicative of verified interest; the student not only states that he likes the work but he actually engages in that kind of activity and has sought training in it.

The thirty-five groups of occupational activity are: tools, machines, dexterity, strength, drafting, accounting, mathematics, records, grammar, art, foods, biology, services, animals, agriculture, speech, entertainment, writing, research, selling, administration, humanities, investigation, music, languages, religion, minerals, electricity, mechanics, astronomy, construction, chemistry, physics, athletics, and vehicles. When the scores have been transferred to the profile every element of the individual's present abilities and aptitudes is graphically isolated and displayed permitting analysis for any purpose the examiner has in mind. The counselor may combine the groups with high "yes" scores and suggest specific jobs which require that particular combination of qualifications. This counseling may be done with work applicants or employees in business and industry or with students in high school or college who seek educational and vocational guidance.

The inventory may be answered in about forty minutes. It is scored in a few minutes. It may be used with either sex. It appears to be more useful with individuals who have had work experience than with high school students who have had limited work activities.

A valuable feature of the inventory is the construction of composite profiles for particular occupational groups, as engineers, sales persons, draftsmen, etc. If a company has properly selected its draftsmen, for example, the group profile will represent the company's own concept of the ideal employee for the job. The profile of an applicant can be compared with the composite profile of successful workers. Composite profiles can be made, too, of student groups, as art majors, home economics majors, etc.

The *Job Qualification Inventory* is the result of a 12-year research project of the National Institute of Vocational Research devoted to improvement of methods by which individuals are matched with jobs. Most of the research was conducted independently by the Institute with the extremely valuable cooperation of many educators and personnel executives. The project was so successful that the materials were made available in 1945 for leaders in government, education, and industry.

Job Placement Reference presents the entire plan. It includes "Introduction to the Job Placement Technique," "Manual for Counselors," "Manual for Personnel Directors," "Manual for Rehabilitation Directors," and "Job Placement Reference." There are also some specimen profiles and a "Key Index" and "Occupational Index." The individual will need a copy of the *Job Qualification Inventory.* These materials are secured from the National Institute of Vocational Research, Los Angeles 14, California.

E. W. S.

JOB SATISFACTION. Although many job satisfaction studies have been conducted on all kinds of occupations, there has been little attempt to give universal meaning to the term "job satisfaction." What is meant usually depends on the type of questionnaire used, the wording of the questions, and the interpretations of that wording by the interviewee. To cut through to a practical definition, we can say that Job Satisfaction is the whole matrix of job factors that make a person like his work situation and be willing to head for it without distaste at the beginning of his workday.

The importance of job satisfaction cannot be overemphasized in our industrial society. It is important to the employer, the worker, and the community. Investigations have shown that when a man is satisfied with his work the employer profits by greater output, fewer quits, and many other tangible and intangible results. Other studies reveal that a person satisfied with his job is likely to profit by having high morale in his general living. And the community profits on the score of individual and industrial well-being.

The demand for labor during the Second World War has helped to reveal the need for understanding the factors contributing to job satisfaction. Because of the scarcity of labor, especially skilled labor, during this period, keeping the right man on the right job became as necessary as finding the right man in the first place. In order to increase production it became essential, in addition, to make him contented when he was kept there. The dynamics of job satisfaction or morale, as a result, became a serious consideration of the employer. It was, indeed, one of the factors that led to the establishment or the expansion of personnel departments in many companies. It also led to putting greater stress on employee counseling, as distinct from straight factual interviewing.

Earlier than World War II impetus had been given to employee counseling by the discoveries that had been made in studies at the Hawthorne Works of Western Electric. These studies also caused a change in the emphasis in job satisfaction research. Many of the early investigations, frequently concerned only tangentially with job satisfaction, looked for the percentages of workers satisfied or dissatisfied with their jobs. The Hawthorne studies, however, revealed that intangible factors on the job led to alterations in production rate presumably because of changes in job satisfaction. An increased number of recent studies investigate the causes of satisfaction or dissatisfaction and the relative importance of the various causes, considering the percentages of workers satisfied as secondary.

The investigations of these percentages, however, cannot be ignored, but a careful scrutiny of the reports on the prevalence of job dissatisfaction reveals diversified results. For example, only 7% of insurance salesmen reported in one study were dissatisfied; whereas 58% of a group of commercial workers, according to another report, were dissatisfied; and 69% of workers, not counseled in high school were dissatisfied. These three examples of groups organized into different categories demonstrate the complexity of even the comparatively simple percentage phase of this subject. This complexity may be simplified to some extent perhaps if we assume that about 150 independent investigations attempting to estimate the percentage of dissatisfied workers comprise a valid sampling of workers. The median percentage of this group lies somewhere between 25 and 30 per cent dissatisfied.

Instead of trying to arrive at a bald percentage of satisfied or dissatisfied workers on the basis of studies of small segments of the whole field of work, it is more profitable to inquire about the results of individual researches. Comparison studies, for example, are fruitful. Thus we find that a larger percentage of men than women are dissatisfied; that there is more dissatisfaction in large companies than in small companies; that skilled workers are more satisfied than semi-skilled workers; that a larger percentage of professional than managerial workers are satisfied and a larger percentage of managerial than commercial workers; that workers who had received school advising showed greater job satisfaction than those unadvised; and that those whose jobs are related to a vocational interest pattern are more satisfied than those whose jobs are in a different field from that of their interest.

As in any subject, in job satisfaction the investigation into the reason why is of greater fundamental significance than into the number who. When we know why workers show satisfaction or dissatisfaction with their jobs, we can take the first step in the direction of increasing satisfaction by eliminating or modifying the causes of its opposite. One fact that is constantly revealing itself in researches among all types of workers is that salary is by no means as important to satisfaction as is generally believed. In check lists of factors that make for satisfied workers, tabulations indicate that salary is a good distance down the list. Statistical correlations show low relationships between wage level and job morale. In fact, it can be generally assumed that, excluding the case of obviously poor wages, the demand for more money or the quitting because of wages is a mask, conscious or unconscious, for strong dissatisfaction with other job factors. For example, in one department of a large company, the men who indicated they were satisfied with their foremen, working conditions, advancement on merit, etc., also indicated that their salaries were at least as good as those for similar work in neighboring companies; whereas men in another department of the same company, doing the same work and getting the same pay rates, but dissatisfied with many job factors, believed they were getting less money than similar workers in the same neighboring plants.

It has been found in numerous studies that workers become dissatisfied with their jobs, or their job morale drops, when they do not believe there are chances for, or cannot understand the logic behind, advancement; when they have no feeling of security for the future; when the physical conditions on the work floor, in the washroom, and in the cafeteria are poor; when, before being hired, they had been promised things they did not get—salary, position, title, etc.; when there was no chance to show initiative, adjust grievances, get proper training for the job, develop group adjustments, or participate in management. Satisfaction is more likely to result when the opposites of these conditions exist, and also when the worker knows that he is protected by insurance, pension, and medical services; when his job has status in the eyes of his fellow workers, his family, or his social group; when he can feel a sense of achievement and have the achievement recognized; when his foreman treats him like a responsible adult.

The foreman, in fact, is one of the most important items in the whole list of the factors that affect job satisfaction. In study after study we find that the immediate supervisor, who represents the management and therefore interprets the rules, who frequently decides on the job, the rate of pay, the worker to be promoted or fired, the time for a rest period or lunch, the man to be assigned the best machine, the extent of cameraderie, the whole tone of the section he controls—this supervisor is given a place of great prominence as a cause of good or poor morale.

Other relationships incidentally revealing dissatisfaction have been given some consideration in researches. It has been found that if group leadership, group adjustment, and the incentive to work in and for the group are lacking, there are more frequent medical absences, reports to the medical department, lateness, and turnover. We have also learned that the larger the company the greater the importance of advancement. Also, there seems to be some relation between shift and morale, in some companies the morale being higher on the night shift than on any others. This result may have been caused by the greater feeling of unity that comes to a group that is somewhat removed, by the working time and recreation time, from workers outside the plant. It may also, however, be caused by more attention by the management to morale-building activities developed for this unpopular shift. The same research showed that in small companies job satisfaction rises with age, but that in large companies it decreases between the ages of twenty and twenty-four and then rises. When age is held constant, on the other hand, satisfaction seems to be high among workers who have been on the job less than one year, drops for those who have been working between one and five years, and rises for workers who have been on the job more than five years.

Studies that approach the subject from a different direction showed relationships between satisfaction and avocational interests. It was discovered that men who had chosen their jobs through interest in the type of work preferred their jobs to their hobbies, whereas men who had chosen their jobs mainly because of the economic return preferred their hobbies. Looked at another way, the figures revealed that those whose vocations and avocations resembled each other were satisfied with their jobs whereas those whose vocations and avocations were different were dissatisfied.

In such a brief space as this, there has been little room thus far to present and then underline the warning that conclusions about job satisfaction are soundly valid only when they are drawn about the group that has been questioned and not about any other group. Implications may be drawn that will aid in the study of another group, but the number of factors affecting job satisfaction are so many and their comparative influences so little known it is both useless and erroneous to transfer conclusions from group to group.

A further need for refraining from using too freely the conclusions drawn from somebody else's study, or to believe that results on any one group are permanent, is apparent when it is realized how complex are the influences that make a man say he feels satisfied or dissatisfied with his job. The job is not something that exists in a vacuum and neither is the worker. The world outside, which includes the international situation, the worker's wife, the crowd on the subway or on the commuter's train, the set of one's breakfast, can affect the way a questionnaire is answered. So too can the whole microcosm inside the plant. Or, to change the point of view, results can be influenced by the honesty and insight that the worker possesses at the time that he answers the questionnaire. These traits are important in any investigation that must use the subjective device of the questionnaire about the individual's reactions. There can be various reasons for answering a questionnaire incorrectly, but also important is the fact that many people have little knowledge of why they feel the way they do and are willing to give answers that would not stand up under the reliability technique of repeating the questionnaire.

In recent years the development of industrial psychiatry has had an influence on the trend of studies on job satisfaction. It has underlined the technique of the interview, and has relegated the objective but usually piecemeal and shallower questionnaire to a subordinate position. Trained clinical psychologists and psychiatrists, in their interviews of the individual worker, have been able to get deeper into the causes of unrest or satisfaction. Their reports are less prone to conclude that a single factor or a few simple factors are the cause of industrial morale. But the intensive interview, which goes further toward finding and correcting the cause of dissatisfaction, cannot blanket as large a group as the questionnaire. The techniques to be used, therefore, must be chosen with the purpose of the investigation in mind. What is done with the results also differs with the individual situation. For example, in a factory it may be felt that there will always be a few workers, because of deep-seated personality difficulties, showing dissatisfaction for their work, and so a low percentage of dissatisfaction can be accepted with equanimity. The same percentage among school teachers, however, should be viewed with concern, for a dissatisfied teacher has more chance to do harm to the personalities of those in her work environment, her pupils.

A knowledge of job satisfaction factors is important to various classes of worker. For the vocational guidance counselor this knowledge should emphasize the need for knowing his client's personality; for the employment service interviewer, the need for knowing job concomitants such as surrounding physical conditions, type of supervision, and personnel policies; for the personnel interviewer, knowing something of both of these bodies of information; for management, knowing the changes that should be made to increase satisfaction (e.g., better foreman training); for everybody connected with the working world, realizing that it *is* a world, a complex unit that is an integral part of the larger world of the individual's total experience.

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The following items together make up an annotated bibliography of all important reports on the subject:

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4. ———, and Shaffer, R. H. Job satisfaction—researches and opinions of 1940–1941. *Occupations*, 1943, *21*, 457–463.
5. ———, and Hand, T. J. Job satisfaction researches of 1942–1943. *Occupations*, 1945, *23*, 412–415.
6. ———. Job satisfaction researches of 1944–1945. To be published in a forthcoming number of *Occupations*.

T. J. H.

JOB SATISFACTION BLANK NO. 12

A Survey of Company Morale. This questionnaire, constructed by Robert Hoppock, is designed to help an employer find out how his employees feel about their jobs.

The first part of the blank asks the subject to rate himself on a series of three-point scales as to his general attitude toward his job. Each point on each scale is defined by a statement and the subject is asked to check the one that best tells how well he likes his job.

The second part of the questionnaire asks more specific questions about phases of the work which might contribute to the general feeling of satisfaction or dissatisfaction expressed in the preliminary items. For each item here the subject is asked to respond with "Yes," "No," or "Not sure."

The responses to the first set of questions may be used to compare the average level of morale in one plant or in one department with that in other plants or departments, or with norms obtained from a survey of 88% of all the employed adults in one American manufacturing community.

The responses to the remainder of the questionnaire may be used to locate sore spots, possible causes of discontent which may lead to labor difficulties if not corrected. The author states that each of these questions has been tested and found to discriminate between satisfied and dissatisfied workers to a degree greater than three times its standard error. No norms are presented for this section of the questionnaire. Each user will need to determine the significant items for his own situation and the interpretation to be made of them.

In addition to the survey uses discussed above, it appears that this blank might be a useful addition to the battery used in psychological or counseling clinics dealing with adjustment problems of adults—veteran clinics, marriage clinics, and psychological clinics attached to courts and institutions.

This questionnaire is a revision of Job Satisfaction Blank No. 5 used in an intensive survey of all the adults in New Hope, Pennsylvania, in 1933. Validity was established by interviewing all the adults in the community and determining satisfaction or dissatisfaction with the job by careful interviewing techniques. All were then invited to fill out the blank concerning their present job, or their most recent job, if unemployed. The questionnaire results were then compared with the interview results. Original data concerning the reliability and validity of Blank No. 5 and the relationship of job satisfaction to other personality factors are given in the literature.[1 2 4]

The 1943 form of Blank No. 12 is lithoprinted, but since the type size is not reduced and the use of white space is liberal, the text is readable and the general appearance is not likely to discourage the subject. The two-page manual is mimeographed.

The publisher is the Psychological Corporation, 522 Fifth Avenue, New York 18.

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F. A. M.

JOURNALISM, APTITUDE FOR. Journalism aptitude testing is in its formative stages, although some investigation in the field was begun as early as 1924. Most of the experimental research to date has centered on the construction of scholastic aptitude tests in the limited field of news or editorial work; almost nothing has been done on job analysis or in the building of tests which would measure aptitude for journalism careers in advertising, public relations, business management and circulation, magazine or book publication, journalistic photography and art.

This limited progress is due in part to the fact that the public conception of journalism has been confined very largely to the work of the reporter. In addition, journalism has been regarded by professional practitioners as an undefinable combination of art and business and profession and trade. Furthermore, progress has been subject to the same limitations which caused one authority to remark regarding all aptitude tests:

> The score attained by a candidate in the aptitude tests indicates only his chances of success in the particular professional course to which he is admitted; it is *no* indication of success in the practice of a profession.

The history of the research in the field may be traced briefly. In the *Journalism Bulletin* for November, 1925, reference is made to a journalism aptitude test constructed by Lawrence W. Murphy and administered to his journalism students at the University of Illinois. This was followed by a group of three articles in the same publication in March, 1927, in which three journalism teachers discuss the subject. Significantly, in one of these articles occurs the comment by Grant M. Hyde, of the University of Wisconsin:

> My own notion is that no psychological tests will be of value to us until the qualifications requisite for journalism are more definitely defined.

In the *Journalism Quarterly*, for March, 1939, J. C. Peterson lists eight criteria employed for selective enrollment of journalism students at the Kansas State College as follows:

> 1. A series of new vocabulary tests consisting of useful terms and especially those which are frequently misused in the field.
> 2. A series of spelling tests consisting of words frequently misspelled in newspaper practice.
> 3. Comprehensive examinations in contemporary affairs.
> 4. Comprehensive examinations covering knowledge of journalism subjects.
> 5. Records of performance in related high school subjects.
> 6. Tests of speed and comprehension in reading.
> 7. The Strong Vocational Interest test.
> 8. Personality tests or inventories.
>
> The principal difficulty encountered in the development and refinement of tests for prediction and selection in any field is the lack of valid criteria of the comparative success of workers already in the field.

Although the writer then outlines a rather far-reaching plan for criteria bearing on the success of professional journalists, indicating a realization of the need, there is no report in the literature of such a study being made.

Another pioneer in the journalism aptitude field is Charles L. Allen, who contributes a report on a Rutgers University program to the *Journalism Quarterly* for June, 1939. Dr. Allen describes a battery of tests given to several hundred journalism students and at least two or three hundred practicing journalists:

> The tests which we have given to date include five sample observation tests using motion pictures; a spelling test; a situation test designed to find out whether a student possesses initiative, energy and resourcefulness as well as an abundance of good old fashioned common sense; a test in following directions which includes map-making, a simple arithmetical calculation, drawing simple geometrical figures and such things as underlining, crossing out, quoting and encircling certain letters in a line of capitals; a vocabulary test in which a student's ability to explain the meaning of words is found; and a news judgment test. The last test consists of ten sets of three statements each. Each set of three statements concerns a similar news happening or possible

> news stories. The student is required to select one of the three sentences which he thinks represents the greatest news value.
>
> We also have in preparation a test for auditory memory, using an aided recall technique, a test for auditory memory unaided, a test for general information, a test on geography and one on word-building.

Allen, now at Northwestern University, presently is engaged in a 10-year study, begun in 1945, which will seek to determine probable scholastic success of journalism students and their subsequent vocational performance.

In May, 1940, two members of the Personnel Research Bureau of the University of Oregon, issued a brief "Study of Journalistic Aptitude" with reference to academic achievement. This report indicated:

1. Freshmen proposing to major in journalism at University of Oregon were, at entrance, an intellectually select group of students.
2. The four-year scholarship of journalism students could most accurately be estimated from their first-term grade point average. Next most useful factors in prediction were: scores on a scholastic aptitude test, high school records, and English placement test scores.
3. Excellence in professional scholarship parallels scholastic success in other courses very closely.
4. "It would be reasonable to accept only students with an *average* decile rating of 5 or higher in high school record *and* scholastic aptitude tests as prospective majors in journalism."
5. "Unless success in journalism really requires much more specific abilities than those now recognized in professional scholarship, *aptitude for journalism* may be thought of as depending primarily on general academic capacity plus a definite vocational interest in newspaper work . . . it is practically impossible to tell a student that he is more likely to succeed scholastically in journalism than in academic work in general."

In the *Journalism Quarterly* for June, 1945, Walter W. Cook, of the University of Minnesota, reports on "Predicting Scholastic Success in Journalism," on the basis of a test constructed by Wendell Knowles and administered under the joint direction of a committee representing the education and journalism faculties of that institution. Three steps were outlined as a method of attack on the problem.

The first step was a preliminary study to determine the value of data then available by the end of the sophomore year in predicting success in journalism. These included: (1) percentile rank in high school, (2) average grade in all freshman and sophomore courses, (3) extracurricular activities in high school and college, (4) grades in sophomore reporting courses, (5) average grade in college English courses, (6) tests of intelligence and achievement given to entering freshmen and (7) the Cooperative Sophomore Culture Test administered at the close of the sophomore year.

The second step involved the construction of a battery of tests designed to sample the unique aptitudes which a job-analysis had indicated were necessary to success in journalism. This battery of tests has been tried out over a period of two years during which revisions were made on the basis of the types of items proving most effective. This step also required the construction and validation of a journalistic "functional skill" rating scale as an additional criterion in establishing the validity of the tests.

The third step, which has not yet been undertaken, involves the objective testing of successful journalists in the many specialties.

Cook's article reports on the results of the first step—"which of the measures routinely available at the end of the sophomore year are relatively most effective in predicting scholastic success in journalism." It concludes that the best predictors among the various measures under test were: honor point ratio in all pre-journalism courses, and honor point ratio in sophomore reporting. It recommends improving "the grading procedure in sophomore reporting" and combination of this measure "with the score on a test especially designed to predict success in journalism."

This finding coincides with Hyde's statement, made in his article already cited, "that any reporting course, wherever placed in the curriculum is bound to be a weeding course because it is the best test-tube sample of journalism." It also checks with unpublished studies made by James L. C. Ford at the University of Oregon in 1940 and at the University of Minnesota in 1945. The Ford studies further indicated that scores made on English achievement tests by freshmen journalism students, who had not taken the usual freshman English composition course, compared favorably with those made by matched students from other departments who had completed the course. However, it should be emphasized again that these conclusions have validity chiefly for those intending to enter the news or editorial fields.

From the earliest appearance of journalism textbooks, various psychological and physiological characteristics have been listed as desirable for the would-be journalist. These have been enumerated chiefly out of the professional experience of the authors, although Max Freyd, in the *Journal of Applied Psychology,* in March, 1921, reported he had discussed the subject with practicing newspapermen and had come to the conclusion that the following traits were necessary for a good reporter:

1. A high degree of intelligence
2. A broad range of information, especially on current events.
3. A good memory
4. Language ability
5. Social ability
6. Nose for news
7. Nerve
8. A keen interest in journalism as a vocation

Other characteristics commonly mentioned include: accuracy, curiosity, resourcefulness, persistence, self-confidence, and integrity. These and other traits, to which qualitative testimony often has been borne, have had little quantitative evidence or support although it may be conceded that any or all of them have been found useful in journalism.

Several writers have dealt with the various vocational opportunities and fields of journalism, and references to this literature are listed below.

In summary, it should be said that much still remains to be done in journalism aptitude measurement. Even in the field of interest tests, the data is scanty although the Kuder Preference Record and the Strong Vocational Interest Test offer some pioneer approaches. Achievement tests have been developed by a number of journalism teachers, chiefly in the nature of examinations for specific courses, but none has been tested nationally on a quantitative basis. Selection of students for existing professional schools of journalism has also been attempted in a number of instances but no uniform method or procedure has been approved. The professional counselor still should proceed with caution in giving vocational advice to the would-be journalist; he may well lean heavily on the aid of present teachers in the journalism schools who have at least the advantage of educational experience as well as their own newspaper or professional backgrounds.

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J. L. C. F.

JOURNALISM TEST, P-L-S

General Statement

The P-L-S Journalism Test was constructed for use as an objective measurement of the student's knowledge in a number of important phases of the field of Journalism. The test covers newswriting and news values, copy reading, history of journalism and general information concerning the field, and headlines. The test is designed for use in high school and college classes which have completed a first course in journalism.

Authors and Publisher

The authors of the test are George H. Phillips, Harry Levinson, and H. E. Schrammel of the Kansas State Teachers College, Emporia, Kansas. The publisher of the test is the Bureau of Educational Measurements, Teachers College, Emporia, Kansas.

Validity of the Test

This test was constructed to agree with the common elements of the leading form books. After the test had been given to several local classes and the results analyzed, it was revised and administered to classes in seven other schools. These results were likewise analyzed and the final revision constructed. The validity of the test thus is based on the content of courses of study and form books, on the suggestions and criticisms of teachers and others competent to express expert opinion in regard thereto, and on an analysis of students' responses.

Reliability of the Test

For 115 high school students for whom scores were available on the experimental edition, a reliability coefficient of .92 ± .01 was obtained. The P. E. of measurement is 2.36, and the P. E. median, .93.

Directions for Giving, Scoring, and Interpreting

The test, which requires 60 minutes of working time, is easy to administer and to score. It is practically self-administering and scoring is accomplished by use of a printed objective key. Percentile norms are provided for interpreting scores. One form of the test is available.

Use of Test Results

It is suggested that the test results may be profitably used in a number of ways: (1) for determining student achievement; (2) for checking the efficiency of instruction; (3) for assigning school marks; (4) for analyzing pupil and class weaknesses; and (5) for motivation of student effort.

H. E. S.

JOURNALS AND PERIODICALS

Educational and Psychological Measurement. This journal is a quarterly "devoted to the development and application of measures of individual differences." It carries articles in the following classifications: (1) discussions of problems pertinent to the whole field of the measurement of individual differences or to specific areas within that field, (2) reports of research on the development and use of tests and measurements in education, industry, and government, (3) descriptions of testing programs being used for various purposes, and (4) miscellaneous notes pertinent to the measurement field, such as suggestions of new types of items or improved methods of treating test data. The journal was founded in 1941. The editorial and business offices are located at 917 Fifteenth Street, N.W., Washington 5, D. C. The subscription rate is four dollars a year.

G. F. K.

PSYCHOLOGY JOURNALS. The following American psychology journals occasionally carry articles of interest to vocational counselors:

Journal of Genetic Psychology, Journal of General Psychology, Journal of Social Psychology, Journal of Psychology. (All of these journals are published by the Journal Press, Provincetown, Massachusetts.)

Psychological Review, Psychological Bulletin, Journal of Experimental Psychology, Journal of Applied Psychology, Psychological Monograph, Journal of Abnormal and Social Psychology, Psychological Abstracts, The American Psychologist. (All of these journals are published by the American Psychological Association, Washington, D. C.)

Other journals of interest to advisers are the Journal of Educational Psychology, Journal of Consulting Psychology, Journal of Educational Research, and Character and Personality.

Psychological Abstracts is the best reference source in the field of psychology, but it does not thoroughly cover the educational periodicals.

Guide to Guidance. The first volume of Guide to Guidance was a mimeographed booklet issued in February, 1939, by the National Association of Deans of Women from their headquarters office in Washington, D. C. Prepared at the request of the president of the Association, Dean Irma Voight, by students in the graduate program in student personnel work for women at Syracuse University, the bibliography contained annotations on 357 books and articles of interest to deans of women and advisers of girls all of which had been published in 1938. To select the items for annotation over 877 books and articles were read and evaluated. The criteria for selection were soundness of research or reasoning, usefulness to the counsellor, and excellence of presentation. Where the same materials were presented in several articles, the most comprehensive and readable were selected. The annotations were designed to give sufficient information to enable the user of the bibliography to select the books or articles he wished to study further without waste of time in looking up those he could not use.

The bibliography was so useful that the editor, Dean M. Eunice Hilton of Syracuse University, was asked to have her students prepare such a volume yearly for distribution in February. The National Association of Deans of Women copyrighted the name and printed Volume II in 1940. Since that time each succeeding volume has been printed and the format has remained essentially the same.

In 1943 with Volume V, the editors' name was used for the first time and it has been used with each succeeding volume. In 1945 the Syracuse University Press took over the publication with the permission of the National Association of Deans of Women and Volume VII appeared that spring.

Volume VII includes annotations on 375 books and articles dealing with materials in the following fields:

I. Philosophy of Education in War and Peace
II. Present Educational Trends and Issues
III. Training and Responsibilities of Personnel Workers
IV. Organization and Administration of Student Personnel
V. Guidance Procedures and Techniques
VI. Areas of Counseling and Guidance
VII. Bibliographies, Directory of Publishers, List of Periodicals

The bibliography is a very useful tool to educators of all types and in every field as well as to the dean of women or adviser of girls as the growth in its use shows. It is planned to continue the yearly publication of the bibliography indefinitely.

M. E. H.

Journal of Rehabilitation. The Journal of Rehabilitation is the official publication of the National Rehabilitation Association, Incorporated. It is a professional magazine of forty pages and is an authoritative source of information on rehabilitation and the related services contributing to the welfare of the disabled. It contains articles by experts in the fields of scientific guidance, physical and mental restoration, many types of training and education, and selective placement.

The Journal is published bimonthly at 1114 56th Street, Des Moines 11, Iowa. The subscription price is two dollars a year, to be deducted from dues paid by members of the National Rehabilitation Association. Subscription price to non-members is two dollars a year. Single copies are fifty cents each.

R. G.

Monthly Labor Review. The Monthly Labor Review, one of the most important publications of the U. S. Department of Labor, has been issued by the Bureau of Labor Statistics since July 1915.[1] This periodical presents the results of comprehensive government labor surveys in both the United States and foreign countries, also digests of authoritative reports on labor and allied subjects by various private agencies and individuals.

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[1] For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price 30 cents a copy. Subscription price per year $3.50 in the United States, Canada and Mexico, $4.75 in other countries.

The Monthly Labor Review has contained no very recent article dealing wholly with vocational guidance. However, a considerable number of studies have been made by the Bureau of Labor Statistics staff intended for the guidance of returning veterans and others casting about for suitable employment. Such studies, the results of which have been carried in the Monthly Labor Review, have dealt with job requirements, employment conditions, and probable employment opportunities for automobile mechanics, physicians, foundry workers, welders, aviation occupations, hosiery workers, and Diesel-engine mechanics. (The Bureau has also issued a pamphlet—Bulletin No. 817—entitled, "Occupational data for counselors.") The March 1945 number included, under "Employment aids for veterans," a summary of the plans for an expanded U. S. Employment Service Counseling Service.

Many sections of the Review contain recent collateral material of value to those engaged in vocational guidance as well as to those being guided. Among the subjects covered in these sections are:

Education and training
Employment conditions
Labor organizations
Postwar reconstruction
Social security
Trend of employment and earnings
Wage and hour statistics
Women in industry

Typical articles supplying significant data for vocational counselors include the following:

September 1945 issue: Opportunities for foreign employment (pp. 451–452). October 1945 issue: Employment trends in seven North Central States, 1939–45 (pp. 695–707); and Wartime expansion of the California airframe industry (pp. 721–727). November 1945 issue: "Extra" workers in the postwar labor force (pp. 841–847); Earnings of women in Illinois industries, June 1945 (pp. 953–954). January 1946 issue: Training rural youth for farm and other occupations (pp. 79–80); and Union wage rates of city street car and bus operators (pp. 112–117). February 1946 issue: Earnings of women and male minors in New York retail stores, 1945 (pp. 230–

232). March 1946 issue: Salary trends in Federal employment (pp. 374–385); and Employment and the older worker (pp. 386–396).

The section headed "Recent publications of labor interest," carried in each number of the Review, includes booknotes and short reviews of current vocational guidance literature.

M. T. W.

OCCUPATIONS (See National Vocational Guidance Association.)

Occupational Abstracts. Series of 6 page folders on occupations in which employment is expected to expand after the war. Each leaflet contains a condensed summary of available literature on a different occupation, covering the nature of the work, abilities and training required, method of entrance and advancement, earnings, hours and working conditions, postwar prospects, and a bibliography of not more than five of the best sources of further information. Published ten times a year. Annual subscription $2.50. Occupational Index, Inc., New York University, New York 3, N. Y.

R. H.

Occupational Index. Annotated bibliography of new books, pamphlets and magazine articles containing occupational information that will be helpful to a person choosing a career. Indexed under 300 occupational titles. Annotations list contents and evaluate quality. Best references recommended and starred. Free and inexpensive pamphlets listed in a separate section. Published quarterly. Annual subscription $5.00. Occupational Index, Inc., New York University, New York 3, N. Y.

R. H.

Occupational Psychology is the Journal of the (British) National Institute of Industrial Psychology, which began its career in August 1920 and was formally incorporated on February 11th, 1921. Its Journal first appeared in January 1923 under the name of *The Journal of the National Institute of Industrial Psychology*. The first number of it contained the following editorial note: This Journal will describe in non-technical language the methods and results of applying scientific knowledge to the human aspects of industry and commerce . . . [It] will accordingly publish accounts of the research and propaganda work carried out in this wide field, not only by the Institute, but also by other similar bodies and by individual investigators both at home and abroad. It will contain abstracts of current periodicals and reports, and will review the more important books on the subject of industrial psychology and physiology." From the outset a large amount of Journal space has been devoted to the problems of vocational and educational guidance. Under this first title the Institute's Journal appeared quarterly until the end of 1931. From January 1932 until the end of 1937 it appeared monthly under the title, *The Human Factor*. From 1938 and onwards it has been published quarterly under its present title, *Occupational Psychology*. The Institute's Journal has from its foundation been under the editorship of Dr. C. S. Myers, C.B.E., F. R. S., the first director of the Institute, who on his retirement in 1938 was appointed Honorary Scientific Adviser and was succeeded in the directorate by Mr. C. B. Frisby, B. Com. Dr. Myers has been successively assisted in the work of editorship by Mrs. Knight, Dr. Reeves, Miss Addinsell and (at present) by Mrs. Cockett.

Occupational Psychology is published at the price of five shillings per number and is distributed *gratis* to every member of the Institute. The Institute is its publisher. In order to obtain it a large number of University and other public libraries at home and abroad subscribe one pound annually. It has proved an invaluable means of spreading information concerning the principles and progress of vocational and industrial psychology (or, to use a better and more comprehensive term, occupational psychology). Articles of from 500 to 1000 words are invited, those accepted being paid for at a standard rate upon publication, the Institute reserving the copyright. These are particularly welcome from authors who have an intimate knowledge of the applications of psychology to vocational, educational, industrial and commercial problems.

In order to obtain contributions conveying information on the developments of occupational psychology abroad, honorary correspondents were early appointed by the Institute, representing most of the civilized countries of the world. *Occupational Psychology* has published a large number of articles describing the development of modern methods of vocational guidance, and of research work both in this field and in that of industrial psychology. And it has published many others illustrating the Institute's investigations in factories, stores and offices, with special reference to vocational selection and to the human factor throughout occupational life. Of late years the more popularly written articles in *Occupational Psychology* have been reduced in number by the Institute's publication of a monthly *News Bulletin*, thus allowing more space for the appearance of technical articles in its Journal.

C. S. M.

JUDGMENT, CARDALL TEST OF PRACTICAL. This test, constructed by Alfred J. Cardall, purports to measure the element of practical judgment as it operates in everyday business and social situations. It is used to predict performance in supervisory and executive work, and in such occupations where the element of judgment is an important part of the job content. The supposition that the essential difference between various levels of responsibility in an organization is that of judgment is substantiated by high critical ratios between levels in supervisory structures, and between technical and non-technical groups. Findings in one company of a critical ratio between supervisors and rank-and-file employees of 7.5, between rank-and-file employees and industrial engineers of 13.8, are typical of studies that have been reported. In another large company, where only correlation coefficients have been reported, an "r" of plus .56 was reported between test results and performance ratings in the supervisory level, as against a minus .45 for intelligence.

The inadequacy of the intelligence test alone as a predictor for performance in business and industry has long bothered industrial psychologists. The reason is due to the fact that the ordinary intelligence test uses items presupposing a school background, rather than the selection of items relative to ordinary or everyday experiences. Consequently, this test yields higher predictions in most business situations. Correlations with intelligence range from .5 to .2 with the increasing independence in the upper ranges of ability. This curvilinear relationship makes it possible to use a short form of this test for rank-and-file industrial employees, thus avoiding the resistance to the "I.Q." test.

Practical judgment has been defined as the ability to select the best of several alternatives. It may be observed that in ordinary situations a number of alternatives spring to mind, but the element of judgment is applied when one is selected over the others. The multiple choice item, therefore, lends itself readily to this definition, and the selection and weighting of items is determined by the extent to which such choices discriminate between those of high and low judgment. The statistical formulae used in the selection and weighting of the items in the test are given in the test manual. The reliability of the test in a large, homogeneous group is reported as .88 by the method of split halves, and .86 by the Kuder & Richardson "T" formula. Higher reliability coefficients have been reported in other situations where the ability range is greater, as of course a reliability coefficient is partially a function of the distribution range. No validity coefficient is published for this test, because in the modern use of the term, validity refers to the predictive significance of a test which, of course, varies from situation to situation. Such "validity" coefficients have ranged in various studies from .2 in routine clerical occupations to .85 in the selection of job analysts and time study men. The relationships vary, as one might suppose, in terms of the element of judgment demanded in the job. In one large public utility company, there was no predictive significance between this test and successful tabulating machine operators, but the relationships ranged up to a prediction of .56 for success in the accounting department.

The test is self-administering and self-scoring. Separate answer sheets to be scored by machine are also available. The test is published by Science Research Associates, 228 S. Wabash Street, Chicago 4, Illinois.

The short form, known as the Industrial Revision, is still in the experimental stages, and may be purchased from the author, A. J. Cardall, Yardley, Penn.

A. J. C.

JUNIOR HIGH SCHOOL. In efforts to render more effective their exploratory and tryout purposes and to afford more valuable services to patrons and community, many of the junior high schools of the United States have developed vocational guidance programs in the last thirty years.

Need

The need for vocational guidance in the junior high has risen largely (1) from the problems incident to providing education for all the children of all the people up to ages 16 to 18; (2) from the tremendous multiplication of job opportunities in the last fifty years; and (3) from the increased number of subjects offered in the senior high schools.

Essential Elements of a Junior High Vocational Guidance Program

Nearly all junior high school vocational guidance programs have the first three elements listed below and some of them the fourth:

(1) A supply of information about the vocational world and its problems and a means of transmitting this to the pupil.

(2) Opportunities for the pupil to discover his interests and abilities through curricular and extra-curricular activities and through tests.

(3) Ways of relating (1) and (2) above which involve—
  (a) group and individual counseling
  (b) the use of personnel data and records.

(4) Placement in full or part-time work. Because of the average age of the junior high population (12–16 years) and state laws governing the employment of youth, the demand for this service is limited. During war-time, however, junior highs have found a greater need for the service and have developed it accordingly.

School Organization for Vocational Guidance

In the approximately 2,500 junior high schools and 3,200 junior-senior high schools of the country wide differences exist in organization and procedures. Some large city systems such as Providence, R. I. and Baltimore, Md. have a central guidance department that directs and coordinates the vocational guidance work in all the secondary schools of the system. Others place vocational guidance under the Department of Research and/or Testing, or of Placement, or of Student Personnel. A number of states have state guidance departments with at least advisory, if not supervisory power, over junior high vocational guidance programs. In other school systems the responsibility for vocational guidance rests on the individual school principals.

Practice in delegating responsibility for vocational guidance within the junior high varies also. In many junior high schools the principal or dean of girls or boys takes the responsibility for vocational guidance. In some it is one of the many functions delegated to that remarkable (sic) jack-of-all trades, the homeroom teacher. In others, classroom teachers discuss the vocational aspects of their particular subject field. In still others specially trained vocational guidance workers head the work. In this connection, the National Vocational Guidance Association has worked out standards for professional workers in vocational guidance and some state school systems have tried to help matters by strict certification requirements for those in vocational guidance positions.

Description of a Desirable Vocational Guidance Program

A study of the philosophy and procedure in junior high vocational guidance indicates a fair amount of agreement on these points. An efficient junior high vocational guidance program—

(1) Stresses group guidance at strategic points, i.e. before the school-leaving age or before choices for senior high must be made.

(2) Offers a class in vocational and educational guidance required of all and taught by a trained teacher, preferably in

the ninth grade. In addition to printed material on occupations, many of these classes use films and slides of occupations, have speakers from business and industry, encourage pupils to interview workers, and take pupils on trips to factories and stores.

(3) Works for parents' co-operation in career planning.

(4) Emphasizes techniques of securing vocational information and makes it clear to pupils that in many cases a definite choice of vocation is not desirable in junior high school, due to insufficient opportunity to study self and the world of occupations. In many cases group counseling in vocational guidance is given with the specific objective of helping the pupil decide on a suitable program in senior high. Thus it can be seen that the work in educational and vocational guidance is inextricably linked on the junior high level and that one part complements and implements the other.

(5) Studies the vocational opportunities in its community; analyzes parents' educational and vocational backgrounds.

(6) Provides for placement in part-time work.

(7) Works always in co-operation with class teachers.

(8) Provides for individual counseling of ninth graders on topics of vocational and educational choices by a trained counselor, who very often teaches the classes in educational and vocational guidance.

(9) Keeps abreast of the times in curriculum revision adjustment.

(10) Has a record system that provides the needed information about each pupil, but avoids unnecessary elaboration and the accumulation of unimportant data.

(11) Uses tests of aptitudes, achievements, and interests as a means of helping pupils discover their interests and abilities, but uses these tests with the understanding that over a period of years interest and aptitudes may change and develop.

Outcomes to be Expected from the Vocational Guidance Program in Junior High

Pupils should understand—

(1) The desirability of making at least a tentative choice of vocational fields that interest them.

(2) Where and how to secure information on an occupation.

(3) That the study of occupations never ends. It must be continued throughout their lives.

(4) The type and amount of education demanded by various occupations.
(5) The relationship between specified school subjects and fields of work.
(6) The uses and limitations of tests of interests, aptitudes, and achievement, and of rating scales.
(7) That most people must work for a living and what some of the present day economic problems are that are connected with this necessity.
(8) What persons and organizations are qualified to give vocational advice.
(9) Relationship between part-time work experiences and permanent vocational plans.
(10) How their own interests and abilities measure up with the requirements of occupations that interest them.

Evaluation

Evaluation of junior high programs is extremely difficult. Some schools have attempted it through follow-up studies, but such studies are more common on the senior high level. Kefauver, G. N. and Hand, H. C. in their book *Appraising Guidance in Secondary Schools*. New York: Macmillan Co., 1941 made an ambitious attempt at evaluation of various parts of a guidance program, but were unable to show statistically any measurable advantages that the school with the vocational guidance program had over one without it. The authors conclude, however, that the evidence of their study indicates that secondary school pupils need not less, but more, guidance services.

Literature

The literature specifically relating to principles and practices of junior high vocational guidance is limited. Professor John M. Brewer of Harvard University has done a great deal in his writings to develop the underlying philosophy of the work.

Mildred Lincoln Billings, who has had actual junior high experience and a wide education, has made substantial contributions to this section of the field. Her book *Group Methods of Studying Occupations*. Scranton: International Textbook Co., 1941 contains one of the most complete bibliographies available. Gertrude Forrester's *Methods of Vocational Guidance*. Boston: D. C. Heath & Co., 1944 is specific and up-to-date in suggestions for the life career class. At the present time Science Research Associates of Chicago are turning out the largest number of publications in the vocational guidance field and many of these are useful in the junior high. The magazine *Occupations,* the official publication of the National Vocational Guidance Association is useful for its reports on federal and community projects in vocational and educational guidance and for reports of current literature and tests.

Future

Many signs indicate that vocational guidance work in the junior high should become of increasing importance. Just as World War I gave a tremendous impetus to tests and measurements, so World War II may be expected to give a needed impetus to vocational guidance work in secondary schools. Many federal activities in the years since Pearl Harbor will prove invaluable in developing programs of vocational guidance. Among these activities may be listed the collection of vocational information by the United States Employment Service and the Department of Labor; the training of army and navy classification officers and of counselors for Army Separation Centers; the use of tests for classification of members of the armed services; and proposed legislation along the line of a jobs-for-all program.

In general those responsible for junior high school vocational guidance programs recognize that their programs are still in the developmental stage and that the present situation presents to them a keen challenge to improve their services to the youth of tomorrow.

R. W. K.

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LANGUAGE PROGNOSIS TESTS

Luria-Orleans Modern Language Prognosis Test. This test is a measure of the ability of students to learn French, Spanish, or Italian, intended to be used before study of the language is begun. The results are useful as a basis for advising students whether to begin a foreign language, as a guide in classifying students, and as an aid in determining the effectiveness of instruction.

Several factors need to be considered in foretelling a pupil's success in language. One of these is his ability to handle situations such as he must meet in his study of a language. This ability can be measured only by permitting the pupil to study some French, Spanish, or Italian and by testing the results of his efforts. This the Luria-Orleans Modern Language Prognosis Test attempts to do. The test consists chiefly of several simple lessons covering fundamental principles, with a test on each lesson. It is based on the theory that to determine how well one can do a job, it is best to let him try it. The study of a language involves certain basic elements, and these are covered by the test.

By comparing the scores on the test with a measure of French, Spanish, or Italian achievement, it is possible to determine the validity of the test; that is, the extent to which it does the job it purports to do.

Determining the possibility of a pupil's success in a school subject is worth more than the effort of a few minutes. Where there is appreciable doubt from the prognosis test score concerning his ability to learn a foreign language, the pupil should be rated on a school-habit rating scale, an intelligence test, and an English grammar test. All the time given to this additional testing is negligible, compared to the waste in needlessly teaching one hopeless pupil for a half year.

The working time for the Modern Language Prognosis Test is 76 minutes. Published by World Book Company, Yonkers-on-Hudson, New York, and Chicago, Illinois.

B. C. W.

LATIN-AMERICA. Latin America, which may be said to include the other American republics and Puerto Rico, a Spanish-speaking possession of the United States, is struggling with the establishment of guidance programs.

The only well-established and complete vocational guidance program is found in Puerto Rico. Cuba and Haiti because of their educational and economic ties with the States, have felt the infiltration of vocational guidance philosophies from eastern universities, but the heritage of "orientación professional" (professional guidance) from Spain, still permeates most of the thinking and philosophy of Latin-American educators.

The concept of professional guidance is generally considered to be "the systematic study of the aptitudes of an individual and the opportunities in the profession, for the purpose of giving advice concerning the profession without considering the economic and social factors involved."

The philosophy of professional guidance continues because of two factors: the slow industrial development of the other American republics and the stigma which is attached to a man who works with his hands for a living. Thus Latin-American educators are forced by those being educated at the high school or college level to think only in terms of professional guidance.

More emphasis seems to be placed on testing in Latin America, with the exception of Puerto Rico and Haiti, than in developing occupational information, individual inventories, counseling interviews, and the other functions of a complete guidance program. It may be due to the fact that testing is remunerative outside of education, and trained personnel in the field of guidance can find no remunerative positions in their division of education. This is demonstrated in several republics by the fact that testing has developed essentially for placement in industry, for which employers are willing to pay a fee.

The known guidance work in Latin America varies greatly and a short description of the work during 1944–1945 in several of the republics and Puerto Rico will develop a picture of the activities in operation.

Puerto Rico

A guidance program is an integral part of 6 vocational schools, 120 rural junior high schools, 90 urban junior high schools, and 46 senior high schools on the island of Puerto Rico. Guidance services are available to over 90% of the pupils of the public secondary schools. This includes the services of trained counselors, 85 on full-time and 100 on part-time work.

This development is the result of the cooperation of Dr. José M.

Gallardo, Commissioner of Education, with the U. S. Office of Education in the use of the Smith-Hughes and George-Deen funds in vocational education for appointing a State Supervisor of Occupational Information and Guidance to organize the program. The University of Puerto Rico and the Polytechnic Institute have cooperated with the State Supervisor in training the personnel, and the Insular Legislature has provided a sum of $150,000 a year for the salaries of the personnel and for expenses involved in purchasing and publishing guidance materials.

The Puerto Rican guidance program has six functions: the collection and dissemination of occupational information, the development of individual inventories, counseling interviews, the exploration of training opportunities, placement into the next stage of educational or vocational progress, and the follow-up of all school-leavers.

One supervisor and three assistants aid the principals and counselors of the schools to carry out their programs successfully. A series of in-service training conferences during the school year has been the most important and effective training activity carried on by the supervisors for this purpose.

In the development of the pupil individual inventory, non-verbal tests from the United States are now being used. Norms for Puerto Rico will soon be established. Directions for administering the tests are in Spanish.

The guidance program in the Puerto Rican schools has developed since 1939 when the State Supervisor was first appointed.

Argentina

In 1925 the government of Argentina created a Bureau of Psychology, but the provisional government of General Uriburu removed the appropriations from the budget. In 1931 this work was taken over by the *Museo Social Argentino,* a private institution, which in 1945 received an appropriation of 50,000 pesos from the Argentine government for its work. One division of the *Museo Social Argentino* is the *Instituto de Orientación Profesional* (Institute of Professional Guidance), Buenos Aires, with clinics in Mendoza and Rosario (Santa Fé). The Institute receives part of this special aid. The money is used for developing aptitude tests, occupational information, exploring training opportunities, and making occupational surveys.

The Institute's work is mostly that of a testing bureau. It charges 2 pesos to test an elementary school child, 3 pesos for a secondary school pupil, and 5 to 10 pesos for adults. For placement in industry it tests clerical workers, apprentices, laborers, chauffeurs, railroad engineers, telephone operators, telegraph operators, and radio telegraphers.

The tests are printed in Spanish and have norms established for children, youths, and adults. They consist of two mental ability tests, a 30 question vocational inventory, and tests of physical characteristics, temperament, manual dexterity, intellectual interests and tendencies.

The results of the testing are mailed to the individuals tested.

Brazil

Educational and professional guidance originated in several institutes and liceos of São Paulo and Río de Janeiro about 1926. It consisted of the dissemination of information concerning changes in education and the development of tests and measurements. The first center of school guidance originated in the Service of Applied Psychology of Public Instruction, São Paulo. In 1938 the Minister of Education created a section of Guidance and Professional Selection.

At present, educational guidance in all secondary, industrial, and commercial schools of Brazil is supervised by the Minister of Education. However, the lack of trained personnel prevents the development of an effective program in the schools.

The National Institute of Pedagogy, Río de Janeiro, collaborates with the Civil Service Department in selecting public employees, and maintains a guidance service open to the public. The Railroad Center of Teaching and Professional Selection, São Paulo, and the National Service of Industrial Apprenticeship, Río de Janeiro, maintain special guidance services in mechanical arts.

A federal law states: The function of educational guidance is to cooperate so that each pupil selects the required subjects leading to his chosen profession by giving him enlightenment and advice, always in agreement with his family."

Professional (vocational) guidance in Brazil deals with the study of individual characteristics, labor market conditions, and the economic level of the family, for the purpose of selecting an occupation and further training or apprenticeship. Testing, individual interviews, and work experiences are also a part of some guidance programs.

Tests of mental ability, special aptitudes, and temperament are being used. Most of the tests are from the United States with necessary adaptations in Portuguese. No national norms have yet been established. The National Institute of Pedagogy, however, is preparing a national mental ability test.

The Institute has established emergency courses for vocational and educational counselors because of the lack of trained personnel in Brazil.

Chile

Although some guidance has been attempted in the Liceo Experimental "Manuel de Salas," Santiago, Chile, it appears that there is no organized program on a national scale. This situation has been roundly condemned in a recent issue of a Chilean educational journal and there is hope that there will be increased activity in the field of occupational guidance.

Colombia

The activities of vocational guidance in Colombia have been limited mainly to a testing program to select (1) students for the different colleges of the National University of Bogotá, (2) street car conductors, (3) students for the National Police School, and to aid in the professional guidance of some secondary school pupils. In one school, pupils have been tested and then placed in sections on the basis of their "intellectual level."

The Terman, Illinois, and Dearborn group tests of mental ability are being used in Spanish versions.

The Psychotechnic Section of the National University of Bogotá is preparing an experimental project on a more comprehensive basis of professional guidance. This project will include the study of the individual and the scientific study of the professions. Much testing is being planned.

Cuba

There is no official backing, as yet, by the Cuban Ministry of Education for a national guidance program. The National University, however, teaches courses in guidance, and numerous educators, trained in the States, are establishing some guidance functions in various sections of Cuba.

The Cuban educators accept the functions of guidance and the technical methods as used in the United States. However, because of the lack of industrial development of Cuba, the University educators approach the problem in the light of professional guidance. The "University plan" is based on a guidance program consisting of tests, occupational information, interviews, and case studies.

Little of the above program is developed except testing. Many tests from the United States have been translated into Spanish and adapted to the Cuban environment. Tests of mental and special aptitudes, sensory discrimination, inventories of interests, and personality are included in this work.

The lack of trained personnel and funds are the obstacles in the way of the development of a national guidance program in Cuba.

Haiti

In 1924 Haiti started a guidance movement in Cap-Haitian, Gonaives, Port-au-Prince, Jacmel, and Jérémie with the introduction in the vocational schools of the individual inventory card, counseling interviews, try-out in the general shop, and placement in employment. This was done rather crudely without a staff prepared for that purpose.

In 1941 and 1942 several administrative members of the vocational schools were sent to the United States to study guidance, and in the summer of 1944 lectures in guidance were given to the secondary school teachers by a professor from the United States. At present in the vocational schools there is a general program of occupational information, individual inventory cards, counseling interviews, placement in employment, and follow-up. Testing for the completion of the individual inventory is lacking.

Trained personnel, money, a general occupational survey, and little industrial development stand in the way of the expansion of the program in Haiti.

Uruguay

There are no organized guidance activities in Uruguay. The Uruguayan Y.M.C.A. has been giving occupational information and has provided some counseling services. The Technical Institute of the South American Federation of Y.M.C.A.'s, a four year training school for Y.M.C.A. secretaries, is the only known educational institution offering a course in the philosophy and methods of guidance.

The University of Labor (a secondary trade school) of the Ministry of Education is developing norms for a battery of tests in mental ability, personality, health, interests, and aptitudes. This work is in the hands of capable educators who are proceeding in a careful scientific manner.

The new importance of industrial and commercial occupations in Uruguay with the resulting increased salaries and less prejudice against manual and technical jobs, combine to broaden the scope of "respectable" vocational interests. Thus the core of guidance in Uruguay now has an excellent chance to expand rapidly.

Venezuela

There are few vocational guidance activities in Venezuela. The best known are those conducted by the Creole Petroleum Corporation. This work is confined to testing for vocational selection in an employment program which is connected directly with the schools of the corporation. The activities, however are only in a preliminary stage.

Mexico

There does not appear to be an organized vocational guidance program in Mexico. The beginnings of vocational education are evident and this may lead to increased interest in guidance.

J. H. H.

LEGAL APTITUDE. An approach to educational or vocational guidance should probably begin with a statement of job opportunities in the field. In the last three decades, there has been much discussion of over-crowding of the bar and this has usually been presented as an argument for some sort of restriction of the number allowed to join the profession each year. It is true that in the decade following the last war, in certain of our largest metropolitan areas, there was over-crowding. But it is equally true that merely saying there was *over-crowding of the bar* is a distortion of the picture. This was a decade of the growth of law-degree mills and there is considerable evidence to indicate that this overcrowding was due not to too many lawyers, but to too many poorly trained lawyers. Again, during this same period there were areas of the country where there was clearly a shortage of lawyers, areas where there were county seats without even one lawyer.

There is still much debate in legal association meetings between those who are trying to restrict the number admitted to the profession by raising the standards or by the adoption of quota systems (the Hamiltonian) and those who stress the position the lawyer plays in our governmental agencies, and hence, believe that he should be as representative of our general population as practicable (the Jeffersonians). It is true that the number of lawyers in the country has increased faster than the general population—from 103 per hundred-thousand in 1850 to 144 per hundred-thousand in 1900, 125 in 1910, 116 in 1920, 131 in 1930 to 129 in 1940. However, accompanying this increase in the ratio of the bar to the general population, is an increase in the demand for the services of the lawyer. For instance, using an index system of weighting, the amount of legal activity in Wisconsin in 1933 as compared to 1880 was:

	Index
Number of divorces	4.4
Number of cases under Workman's Compensation Act	9.5
Business failures	5.8

(Index for 1880 = 1)

The route to this profession, as to most others, is an obstacle race in which the hopeful overcome a series of hurdles—the pre-legal course, the law school course, the bar examination and finally making a success in the profession.

The law school is usually considered as the chief hurdle in this race.

The problem of selection of men for admission to law school, beyond the mere requirement of so many high school or college credits came to the fore in the later twenties. Most law schools were showing very high mortalities in their student bodies. Many failed forty to fifty per cent in their freshman year, and some of these showed considerable pride in their percentages of failures. In the late twenties and early thirties, this feeling of pride in high "flunk percentages" became not only unfashionable but symptomatic of institutional failure. Law schools began to study the factors which would prognosticate success in law school.

As a result of these studies, we now know there is considerable evidence to indicate that we can predict with a fair degree of accuracy men who will or will not be likely to succeed in law school. In the first place, there appears to be a relation between the quantity of pre-legal training and success in law school. The evidence indicates that a candidate's chances of succeeding in law increases with the number of years of law school, up to three years. There is still some doubt as to whether the fourth year of college increases chances of succeeding in law school. There is also much evidence to indicate that quality of pre-legal work in terms of grades is very indicative. The most elaborate studies in this field were conducted by the Law School of Columbia University published in the annual reports of the Dean for the years 1928 to 1937.

As to what should be studied as a preparation for law school, there is very little definite knowledge. Logically, it has been suggested by various authorities that students should study Latin, political science, logic, history, philosophy, psychology, sociology, economics or mathematics. However, evidence to indicate that majoring in one field is better than in another is far from being decisive.

There also has been much work done on the development of tests of 'legal aptitude.' The best of these have been developed by law schools for their own use, for example Yale and Columbia, which are not available for general circulation. The most widely used test of "legal aptitude" is the Ferson-Stoddard Test (published by the American Law School Review). Its reliability (corrected split-half technique) is plus .92, and its validity has ranged from plus .42 to plus .57. Other tests which have been used are the California Legal Aptititude Test (validity coefficients of plus .52 to plus .64 reported) the University of Michigan Test of Legal Aptitude (validity coefficients of plus .47 to plus .55). Validity is usually based upon first-year or first-semester grades. Where the law school grades for longer intervals are used, the coefficients of validity are lower.

In general, the student's record in college is a better criterion for the prediction of success in law school than aptitude test scores. This is to be expected since all the tests are to a considerable extent tests of general scholastic aptitude (intelligence) and the college record is a reflection of this aptitude plus the degree of efficiency or the application with which this is used. However, the combination of the two factors, college grades plus test results, gives a higher correlation with law schools grades than either used alone. When the candidate for entrance into the legal profession has finished his law school training, in most states he must pass a bar examination. The same factors which predicted his success in law school also predict his success in passing the bar examinations. In addition to these, the type of legal training is also related to success in passing bar examinations. As we go from correspondence courses, to law office training, to part-time law schools, to accredited full-time day law schools, the percentage who succeed in passing the bar examinations increases. There is considerable evidence to indicate that bar examinations are delaying devices, rather than instruments which determine who will or will not enter the profession. It is true that the percentage who pass a given bar examination is usually from forty to fifty, but when the percentage of men who finally pass their bar examinations is calculated it has usually been found to be in the upper nineties. Finally, the same factors which were stated as predicting success in passing bar examinations have been found to be predictive of success in the profession; success as measured by income or by type of cases handled. This field has been explored very slightly but the available evidence is all in this direction.

Other information on factors associated with the legal profession and preparation for it are scattered through educational, legal, and psychological journals. Most of this material can be found listed in Psychological Abstracts and the Index of Legal Periodicals. A goodly part of the material is found by the Handbook of the Association of American Law Schools, American Law School Review, The Bar Examiner and Reports of Law School Deans.

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F. J. G.

LIBRARIANSHIP, APTITUDE FOR. Librarianship attracts men and women who enjoy contact with books and are genuinely interested in people. Personal qualities necessary for success in any profession are important in librarianship—good physical and mental health, an ability to work harmoniously with others, initiative, resourcefulness, imagination and alertness to changing conditions. In its present highly organized form, library service is a comparatively new profession offering opportunities to capitalize on varying backgrounds and special talents. Executive ability and qualities of leadership are essential for the chief librarian of a library or system of libraries, for associate librarians in large libraries, heads of departments and other librarians in administrative positions.

The reference librarian, skilful in pursuing elusive facts, assists readers in their search for information. The readers' adviser, as an expert in analyzing the reader and his background, plans programs of reading to meet his particular needs.

Library work with children in public libraries appeals to many young women and offers a field in which the supply never reaches the demand. The school librarian serves children and young people within the school and contributes to its educational program.

Through cataloging and classification of books and other materials, the cataloger organizes and interprets the library collection for the benefit of readers. Librarians of special libraries or subject departments of large libraries must possess specialized knowledge of the literature of their respective subject fields.

For effective service in county and regional libraries, librarians must understand the social organization of rural communities and the social objectives of rural leaders. Public relations experts, librarians for hospital and medical libraries, and those for other types of developing services need the special preparation and personal qualities suggested by these positions.

Necessary Education

Completion of a college education and of a professional curriculum offered by a library school is generally prerequisite for all positions of professional grade. *Undergraduate study* of the librarian should introduce him to various fields of knowledge and provide an opportunity for study as intensive as possible in a subject major. A librarian is expected to have background in history and in American and English literature, a working knowledge of foreign languages, particularly French, German or Spanish, and some ability in methods of research. The fields of the physical sciences or the social sciences are of particular value to prospective librarians.

The Board of Education for Librarianship of the American Library Association accredits library schools and publishes a list, obtainable on request.

Most of the accredited library schools require a bachelor's degree for admission and they further specify a scholarship record that is better than average. With a few exceptions the other accredited library schools require the completion of three years of college study.

In general the library schools do not encourage applications from persons of more than thirty-five years of age. Both men and women students are enrolled by all library schools except those established in colleges for women.

References:

1. Bryan, A. The testing program in the library schools. *Library Quarterly,* 9, 32–62.
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3. Charles, M. H. Passing the book. *Mademoiselle,* Sept., 1943.
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5. Rossell, B. S. *Public libraries in the life of the nation*. Chicago: American Library Association, 1943.

6. Savord, R. *Special librarianship as a career.* New London, Conn.: Institute of Women's Professional Relations, 1945.
7. *Training for library work.* Chicago: A. L. A. Board of Education for Librarianship. (Copy on request.)

A. M. H.

LIBRARY. The library has an important function in a vocational guidance program. Whether it be a large library with a special collection on jobs and guidance or a small library that has assembled only a few occupational materials, it can serve both adults and young people, by obtaining, organizing, and disseminating vocational information.

The library offers help both to those who are seeking to choose a satisfactory field of work and to their counselors and teachers. Knowing that a wise occupational choice must be based on the individual's knowledge of his own interests and abilities, and on knowledge of the world of work, the librarian collects and recommends a variety of material dealing with these topics.

Wide reading in the fields of business, economics, science, literature, travel, and biography, helps the student and job seeker know the nature of many kinds of work, and in the process to recognize his own major vocational interests. The library also contributes to the young persons' discovery of his own abilities, through providing books on popular psychology and on various crafts and skills, or materials pertaining to the work experience of the young person. These all aid the processes of vocational self-discovery.

The library's chief service, however, to those choosing a job field, is in providing adequate information about jobs. It should also provide books, pamphlets, periodicals, and clippings on the related topics of getting, holding, and advancing on the job. Not only does the library foster individual reading and study on these topics but often provides the textual materials for courses in occupations offered by high schools, colleges, and other agencies. In some schools, also, the library provides information for homeroom and committee projects involving descriptions of occupations, personality adjustment, or job seeking and holding. In fact, all subject matter classes and special courses, such as those in agriculture, art, household arts, and music, can be given vocational significance if the library supplies suitable data for supplementary reading.

The library serves not only those choosing jobs for the first time, but those who have skills and who do not know where or how to use them, and those who are changing jobs. It can also provide information useful to special groups such as the handicapped, and those who wish to work part time. Nor does the library overlook self-employment. The self-employment field is especially important to minority group members, who very often are forced to establish their own business because they cannot obtain jobs in the employment of others.

The second major function of an adequate occupational library is to provide background material in the field of guidance for counselors, teachers, and community leaders. The school administrator often requests the library staff to circulate current occupational materials among the faculty, so that the teaching and other school staff may keep abreast of job trends or developments in specific occupational fields. For counselors and teachers, the library will be the source of, or the guide to, the latest printed materials on techniques and methods in the field of guidance. Its books and pamphlets on applied psychology will be valuable to the counselor and can often be used by him as suggested reading for those being counseled. In addition, the library may act as the agent of the administrator in collecting information on the guidance program of other schools.

Generally speaking, two aspects of occupational information, as such, are usually covered in the library: specific information on jobs, such as conditions of work, hours, rate of pay, chances of advancement, training, and related jobs; and information on employment trends and economic conditions. This occupational data will of course be supplemented by material on job seeking, occupational relations, psychology, personal adjustment, and principles of education and guidance.

An effective library contains five major kinds of occupational materials: books about vocations; pamphlets; magazines; newspaper and other clippings; and bulletins or catalogs of colleges, universities, and trade schools.

The number of *books* with occupational significance increases day by day. Books give basic facts about occupations, facts that do not change from month to month, but which may be counted upon to be fairly stable and unchanging. Books of all types, technical, self-help, biographical, and even fiction, may be used as sources of occupational information. These occupational books are sometimes filed under the regular classification plan of the library of which they are a part, but often, in order to make them more easily available, they are set aside and classified as a separate collection.

A suggested minimum book list for a vocational library may well comprise the following:

Brewer, John M., and Landy, Edward. *Occupations Today.* Boston: Ginn and Company, 1943.

Campbell, William G., and Bedford, James H. *You and Your Future Job.* Los Angeles: Society for Occupational Research, Ltd., 1944.

Davey, Mildred A., Smith, Elizabeth M., and Myers, Theodore R. *Everyday Occupations.* Boston: D. C. Heath and Company, 1941.

Lasher, Willard K., and Richards, Edward A. *How You Can Get a Better Job.* Chicago: American Technical Society, 1943.

Lyons, George J., and Martin, Harmon C. *The Strategy of Job Finding.* New York: Prentice-Hall, Inc., 1940.

U. S. Department of Labor and United States Employment Service. *Dictionary of Occupational Titles.* Part I: Definitions of Titles, and Part II: Titles and Codes. Washington: United States Government Printing Office, 1939.

Yale, John R. *How to Build an Occupational Information Library.* Rev. ed. Chicago: Science Research Associates, 1946.

Pamphlets, however, are the major source of current and changing information on occupations. Professional organizations often publish pamphlets about their specific fields, as do also trade unions and industries. Government agencies, such as the U. S. Office of Education, War Manpower Commission, Apprenticeship Training Service, War and Navy Departments and various state departments of education, publish pamphlets which may be conveniently located through the *Monthly Catalog of U. S. Public Documents* and the *Monthly Check List of State Publications* (Government Printing Office, Washington, D. C.). Major sources of pamphlets include, in addition to those named above, six publishers specializing in occupational materials: Institute for Research, Chicago; Occupational Index, Inc., New York; Bellman Publishing Company, Boston; Science Research Associates, Chicago; Commonwealth Book Company, Inc., Chicago; Morgan-Dillon and Company, Chicago.

Magazines, even those covering general fields, often contain useful occupational data; however a library wishing to conserve funds will select its magazines carefully with references to amount and nature of vocational content. It will probably plan to include some which are devoted to vocational guidance and some to activities in a particular occupational field. Such magazines serve both to inspire and to give information to the reader.

A list of magazines for the occupational library might include: *Business Week, Time,* or the *United States News; Publisher's*

Weekly; Vocational Trends; Occupations; Career News; the *Manpower Review; Monthly Labor Review;* the two government check lists mentioned above; and the *Journal of Applied Psychology.*

Newspaper clippings often give valuable occupational material and up-to-date information on economic and job trends. They, too, may be filed in a special drawer or with the pamphlets.

Best sources of training for entrance into a contemplated field, time requirements, and expenses involved are often basic considerations in the choice of an occupation. A file of *college catalogs* and trade school bulletins, kept currently up-to-date, is a convenient device for making such facts easily available.

Materials for the occupational library should be selected on the basis of need and demand, rather than for completeness. The large occupational fields should be covered and those specific occupations in which readers of the community served by the library are likely to be interested. It may be undesirable to give much space and time to data on obscure occupations or those in which there is little public interest.

Much occupational material loses value with time. Wages and hours, and the laws covering them, change. Licensing requirements for the work or the worker, and educational standards in the field, also are adapted to changing opinion or needs. New tools and labor-saving devices quickly change the pattern of certain jobs. The librarian therefore, must frequently consider the desirability of discarding old materials and replacing them with new or revised items.

The alert librarian will look for vocational values in all reading materials which she examines and will constantly seek to locate occupational pamphlets issued by local businesses, industries, schools, and organizations. For a rapid and comprehensive survey of current vocational books, pamphlets, and articles on a national scale, two indexes may be useful, the monthly *Guidance Index* of Science Research Associates and the quarterly *Occupational Index* published at New York University.

The occupational library, with its wide diversity of materials, usually finds a simple filing system invaluable. Much, indeed most, occupational information is available in pamphlet or magazine form. Often it has value only because of its current nature. Unless properly classified and filed for ready reference, its value is lost. This pamphlet and clipping material is usually filed vertically.

In selecting a filing plan, certain criteria should be kept in mind. A library supervised by volunteers or by busy counselors, must, of course, have a filing plan that is easy to use and that requires a minimum of administrative time and work. The classification system should be understandable to people without library training, and clear even to the novice. It should work as nearly automatically as possible, requiring a minimum of study or use of additional reference books. As little time as possible should be required for classifying, marking, filing, and refiling the materials.

Insofar as possible, the filing plan should fit in with established library procedure, since it may be necessary to combine the occupational collection with other reading material which has been catalogued according to established library methods. The filing plan should be expandable, too, adequate for the smaller beginning library, and expandable to meet the needs of the larger library which will be assembled later.

The effectiveness of a vocational library is dependent on selection and organization of materials and quality of staff much more than on its size or physical equipment. The Army, for instance, has made wide use of a Vocational Information Kit, which is a portable library of occupational materials. Its container, which is only the size of one drawer of the usual filing cabinet, holds some four hundred up-to-date pamphlets, from more than a hundred sources. These materials, checked for quality, simplicity, attractiveness, and duplication, and filed simply, present occupational materials ready for quick use by large numbers of persons from varying backgrounds.

While the Army Kit is not available to civilians, the principles used in building it may profitably be followed by any librarian.

1. Check basic lists of occupational information materials, such as are available in books, bibliographies, or indexes of the field, or through the state department of education.

2. Compile lists of publishers and other groups which provide job information, and write for price lists and materials.

3. Set up a good system for classifying these and other materials which one will be collecting.

Having collected the material, having filed it so that it will be available and easy to use, and having arranged for new materials to be coming in, librarians and counselors will be faced with the problem of encouraging people to use the occupational library.

The counselor or librarian is, himself, in a favorable position to encourage the use of the library. In personal conferences he may refer to the occupational material, perhaps even showing the counselee how to use it and what to look for. Newspaper articles may announce to students or to the public that the library is available.

Newspapers will often be willing to run timely articles or well-written features on specific occupations. An enterprising reporter may be glad to write and handle an occupational series, if adequate and interesting material is provided.

Browsing in the occupational materials collection should be made easy and pleasant. Some organizations have set up vocational guidance alcoves for this purpose. Colorful posters may be used to feature special occupations and call attention to the value of the whole collection. These posters could be made by the art classes and displayed in halls and classrooms, as well as in the library.

Once new vocational books are obtained, it is not enough to index them and place them on shelves. They should often be made parts of exhibits, preferably in groups dealing with related occupations. Notations may be placed in the books themselves, referring to related information in certain folders of the vertical file. Special groups of vocational books might also be displayed in classrooms for limited periods.

A good vocational collection takes time and resourcefulness to develop, but most of all it requires tenacity. The steady effort comes, however, as leaders, counselors, and librarians realize how much value the occupational library can contribute to a vocational guidance program.

J. R. Y.

LIFE DURATION, OCCUPATION AND. A man's duration of life may be profoundly influenced by the occupation which he pursues. His employment determines not only the physical energy that he expends and the hazards that he meets throughout his working hours, but it also governs those economic and social conditions which have such a powerful impact on the business of living. It is known [5] that the relationship between health and occupation was observed by the ancient Egyptians, Greeks, and Romans, but there was little interest shown because heavy labor was performed by slaves, prisoners of war, or convicts. The few artisans were not exposed to the hazards of large-scale technology. Several excellent monographs and books on occupational diseases were published in the 16th, 17th, and 18th centuries. Yet small attention was given to the welfare of the worker until rapid progress in industrialization made the existence of the laborer an item for economic consideration. The high death rates and deplorable living conditions in English industrial cities finally led to the enactment of labor legislation in the early 19th century. As mechanization spread to other countries, protective measures followed, but slowly. In the United States the shortage of labor during the World War provided the impetus for research on occupational mortality and morbidity.

Measures of Mortality

It was early recognized that computation of the risk of dying imposed by a particular employment is a statistical problem. That it is not a simple problem is shown by a report of the International Labor Office[3] dealing with this subject. The literature on specific occupational diseases is abundant, but reliable data for computation of the age distribution of death rates by occupation is scarce. An occupational death rate is the number of deaths occurring in an occupation relative to the total number of individuals exposed to the risks of that occupation in a given period of time. The practical difficulty lies in obtaining the number of deaths and the number exposed to risk on a comparable basis with regard to the time of occurrence or to the occupational classification. The enumeration of persons engaged in a particular employment at a given time usually does not completely cover the same period over which the deaths occur. The data are generally derived from two independent sources, as from the census and death certificates. Moreover, death certificates are notably inaccurate and incomplete in the listing of occupation. A life table is a conventional method of expressing the age distribution of death rates of a particular population, living and dying under the conditions existing during a limited period of time. The basic data required for the construction of an occupational life table may thus contain the same errors as are found in the computation of age-specific occupational mortality rates.

Other measures of occupational mortality have been devised which do not require a knowledge of the number or ages of persons employed, but are based on deaths alone. One of these, the proportionate mortality rate, is the proportion of deaths for each age or cause of death to the total deaths at all ages or for all causes within the group considered. Proportionate mortality rates are of little value as a measure of the life duration of a particular occupational group, but when interpreted with due consideration for the method by which they are derived, such rates are of value in comparing the relative incidence of causes of death among various employments.

Certain biological and social factors which enter into the selection and pursuit of an occupation may distort the figures on life duration. The lessening of social restrictions, increasing mechanization, and ease of travel have facilitated frequent changes of employment. This tends to mask any cumulative hazards to life that some industries may possess. Persons may change occupation because of lack of physical fitness or development of some ailment. They select pursuits where the physical requirements are less exacting or where the risks to health appear to be small. It has been shown that this same factor enters into the original selection of employment to an even greater extent. In all probability, such selection results in higher rates of mortality than should be attributed to some of the light and non-hazardous vocations. Occupational differences in the average age of entry, the transfer of workers out of some types of employment, and endurance until old age in other pursuits, result in marked variations in the age distributions of the employed and of deaths. If not taken into account, these age differences may result in faulty interpretation of the relative risks to life. For valid comparisons of duration of life among occupations, mortality rates must be computed age by age. Then if an index of total mortality is desired, a standardized death rate may be computed which is independent of the age distributions of the occupations considered.

Socio-Economic Status

Enmeshed with the specific characteristics of a man's work are those conditions of income, housing, clothing, food, sanitation, agglomeration, medical care, and social and biological heritage. All reports have shown that these factors, almost impossible of independent analysis, collectively play a large part in determining duration of life. One excellent study [7] presents death rates based upon death certificates and U. S. Census figures for 1930 in ten selected states. The death rates per 1,000, standardized for ages 15 to 64, are given as follows:

All gainfully occupied males..............	8.70
Professional men	7.00
Proprietors, managers, and officials..........	7.38
Clerks and kindred workers................	7.40
Agricultural workers	6.21
Skilled workers and foremen...............	8.12
Semiskilled workers	9.86
Unskilled workers	13.10

Agricultural workers are the only exception to the inverse relationship between mortality and socio-economic status. Dublin and Lotka,[1] taking college graduates as representative of the professional class as a whole, present life table figures showing that this group had a longer average expectation of life at every age than did all United States white males. For the period covered (1870–1925) the expectation of life of college graduates exceeded that of all white males in 1901 by 5 years at age 22 and by 4 years at age 32. Similar figures based on more recent mortality experience of the two groups would probable be not quite so favorable for college graduates due to the increasing attention that has been given to public health and to industrial risks during the past 25 years.

In a study based on proportionate mortality[2] in insured populations, it is shown that the death rates of wage-earners exceed at every age those of males in the general population and of males insured under non-industrial policies in the same company. The difference between the rates increases each year up to the age of about 54. The authors considered this as an indication that exposure to industrial hazards is cumulative in its deleterious effect. This cumulative effect is probably true also of the generally lower socio-economic condition of industrial workers. The evidence from all literature shows that employees in the lower socio-economic brackets have higher mortality rates for nearly every principal cause of death. This differential is particularly marked for tuberculosis and other respiratory diseases. Mortality from valvular heart disease, cancer, and diseases of the nervous system also show a higher incidence in the lower socio-economic classes. Other heart disease, nephritis, and cerebral hemorrhage show little association with economic and social environment. The upper and middle classes are at a disadvantage only with respect to the death rates from disorders of the circulatory and digestive systems.

Factors determining life duration are so complex that attempts to analyze them even in two groups, socio-economic factors and specific occupational risks, have been largely unsuccessful. Although socio-economic factors are a potent force in mortality, conditions which are specifically occupational play a large part in increasing the death rates in the young age groups, and in the older age groups for those occupations which may have cumulative deleterious effects. But in examining death rates of particular occupations one should be aware of the elements of selection and socio-economic environment that contribute to the magnitude of the figures.

Occupational Mortality

A previously-mentioned report[7] presents standardized death rates per 100,000 gainfully occupied males. The rates are given for 53 occupations, each showing 500 or more deaths in 1930 in ten selected states. The figures for certain of these pursuits are listed below.

Occupation	Death Rate per 100,000
All gainfully occupied males in selected occupations	910
Lawyers, judges, and justices	698
Physicians and surgeons	786
Technical engineers	548
Retail dealers	840
Managers and officials (manufacturing)	614
"Clerks" in stores	772
Insurance agents	677
Salesmen	715
Bookkeepers, cashiers, and accountants	693
Agricultural workers	623
Carpenters	719
Electricians	731
Engineers (stationary)	862
Foremen and overseers (manufacturing)	609
Machinists	766
Mechanics (not otherwise specified)	703
Painters, glaziers, and varnishers (building)	1,051
Plumbers and gas and steam fitters	902
Operatives, manufacturing industries	1,041
Chauffeurs, truck, and tractor drivers	790
Factory and building construction laborers	1,740
Laborers, manufacturing	510
Coal mine operatives	1,240
Servant classes	1,222

A survey of these figures indicates the favorable position of the principal professions with respect to duration of life. Physicians, although having the economic and social advantages of the other professions, show a higher rate of mortality than the rest of this group. They have a greater incidence of pneumonia than the other professions and higher death rates from heart diseases and cerebral hemorrhage than all occupied males. This is undoubtedly due to constant exposure to diseases and to irregular living conditions. Teachers and college professors are notably long-lived. In the above study, 323 deaths of teachers 15 to 64 years of age, contributed to a crude mortality rate of only 444 per 100,000.

In the heterogeneous group of retail dealers, the mortality includes deaths of coal merchants, live-stock dealers, hucksters and peddlers, and junk dealers, whose death rates are high because of risk from dust, exposure, or disease vectors. Aside from these few specific hazards, retail dealers have no higher death rates than the rest of the proprietary and ownership class including building contractors, manufacturing officials, bankers, and brokers. Proprietors of restaurants experienced a standardized mortality of 1,081 per 100,000 due largely to an excess of deaths from nephritis, cirrhosis of the liver, and accidents. Salesmen, agents, and clerical workers have uniformly favorable rates of mortality.

Agricultural workers under 65 years of age have low standardized death rates for every numerically important cause of death. Although farmers and farm laborers as a group are not in the highest economic class and do not have ready benefits of medical and public health facilities, these factors are more than compensated for, in adults, by the nature of the environment. The differential in favor of agricultural workers is small in the youngest age groups, but increases at older ages. This probably results from the fact that rural mortality is higher than urban mortality in adolescence and then reverses during early adulthood.

Among the largest of the skilled trades few have exceptionally high death rates. Building painters, glaziers, and varnishers have high frequencies of death from heart diseases, nephritis, and accidents. About 2 per cent of the deaths in this group are due to lead poisoning, and the effects of this chronic ailment also contribute to deaths in other categories. Moulders, founders, and casters, with a standardized death rate of 1,019 per 100,000 show very high mortality from tuberculosis of the respiratory system and pneumonia. These diseases also shorten the lives of other skilled and semi-skilled persons whose work subjects them to excessive or changing temperatures. Many of the semi-skilled occupations, such as operatives in the steel, automotive, and metal fabrication industries; drivers; and most textile and garment workers, have average or below average death rates. Yet semi-skilled workers as a whole demonstrate above average mortality as compared to all occupied males. In this group many employees in smaller industries and scattered workers in larger industries are exposed to specific occupational hazards. Operatives in the manufacture of non-metallic mineral products have their life expectancy reduced by inhalation of stone dust, resulting in high death rates from tuberculosis and pneumonia. Certain grinders, polishers, and sand blasters are exposed to the same dangers. Animal or vegetable dusts cause foreshortening of life among some operatives in the manufacture of leather goods, felt products, wood products, and tobacco. Smaller groups of semi-skilled workers are exposed to industrial poisons which increase loss of life due to nephritis and diseases of the circulatory and digestive systems. Accidental death is not extremely high among semi-skilled workers in general, but commercial sailors and deck-hands, railroad brakemen and switchmen, and electrical linemen show high percentages of deaths from this cause.

The adverse factors mentioned for skilled and semi-skilled workers shorten the life span of unskilled laborers even more. For them the risks are greater numerically, in length of exposure, and in intensity. Canadian and United States figures show that the excessive death rate of coal miners is due almost entirely to accidents. It is reported that in this group the expectation of life at age 20 is shortened by as much as 8 years. The accident mortality of other miners and quarriers is not quite so great, but they suffer a high fatality from tuberculosis due to inhalation of dusts containing silica. Firemen (stationary) have a standardized mortality rate of 1,002 per 100,000, respiratory diseases accounting for the excess. The picture is similar for other laborers who encounter abnormal temperatures. Factory and building construction laborers as a whole have higher death rates for every principal cause of death than are experienced by any other large group. A multitude of widespread occupational hazards, fatigue, and low economic status result in high mortality from accidents, tuberculosis, pneumonia, and heart and circulatory diseases. That these conditions are universal is denied by the low death rate for manufacturing laborers. The bulk of this group works in industries where health and accident controls are observed and where heavy manual labor is not an ordinary requirement. It is known that high expenditure of physical energy curtails life. After accounting for socio-economic class differences and deducting death due to accidents and specific industrial hazards, Pearl[4] found that on the average, hard physical labor is directly associated with high mortality from ages 40 to 45 and older. This partially accounts for the extreme mortality of general laborers, draymen, stevedores and longshoremen.

The longevity of laborers in personal service is probably influenced by their close contact with large numbers of people, linens, clothing, or other vectors of disease. The high death rates of some laundry workers, waiters, and servants in hotels and restaurants are attributable, to a degree, to this factor. The inordinate mortality in some servant classes is not due to true occupational hazard, but results from occupational selection of light employment by constitutionally weak persons. Thus the over-all death rate of the servant group, though rightfully high, is probably not an accurate measure of the risks to life experienced by this group.

Duration of life is only one measure of the healthfulness of an occupation. Morbidity must also be considered because mortality and the incidence of accidents or diseases do not always follow parallel courses for a particular employment. An occupation which may show a relatively short average expectation of life due to high fatality from one or two causes may show a low incidence of diseases in general. Conversely another occupation may have a high rate of accidents and ailments which by their nature are not fatal. In such a case the morbidity is not directly related to duration of life except to such a degree as the minor damages, by their cumulative effect, may contribute to the exogenous senescence of the individual. Advancing mechanization adds to the danger of fatal accidents, but concurrently reduces the requirements of heavy manual labor. The increase in manufacture of chemical and synthetic products may introduce new hazards from industrial poisons. Yet it is to be expected that advances in public health and industrial hygiene will continue to effect reductions in sickness and accident liability and lead to further prolongation of the average life span.

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LIFTING HANDICAPS

Introduction

A wide range of disabilities cutting across many categories handicaps a person for jobs involving lifting. To assess properly the handicap and to do an adequate counseling job, the nature of the complaint must be carefully investigated, the amount of both the physical and emotional handicap estimated, and accommodation made to the handicap in the job objective. The positive aspect of counseling the handicapped, that of guiding them to jobs where they are not deficient in any significant respect, remains the primary consideration. However, certain special problems do arise in counseling persons handicapped for lifting, particularly in evaluating the amount of disability and then in recognizing the occupational fields to be avoided. Special categories of physical and mental disease are particularly disabling for lifting tasks, and the difference between exercise and over-exertion must be recognized and considered.

Lifting Requirements Defined

Two dimensions must be considered in defining the lifting requirements of a particular job: amount of weight lifted, and length of time the lifting is done on the job. For its job analysis program, the War Manpower Commission developed a rating scale for lifting tasks taking into account these two dimensions. The scale may be charted as follows:

Weight Lifted	*Occasional Lifting* (Up to 1/3 of worker's time)	*Intermittent Lifting* (1/3 to 2/3 of time)	*Substantial Lifting* (Over 2/3 of time)
Less than 15 lb.	Little	Little	Moderate
15–40 lbs.	Little	Moderate	Moderate
More than 40 lbs.	Great	Great	Great

By thus standardizing its consideration of lifting as well as other job tasks, the War Manpower Commission has established a handy reference for counselors seeking information on the physical demands of a wide range of jobs.

Evaluation of the Individual's Handicap

The handicap for lifting stems from a larger variety of disabilities, both physical and emotional, than do most other vocational handicaps. One tabulation of veterans' disabilities indicates that from one-third to one-half are either physically or emotionally handicapping for work requiring extensive lifting. The more common physical disabilities involved include cardiac disorders, pulmonary tuberculosis, defects and diseases of the limbs and back, and asthma. Smaller in number are the various hernias, chest, lung and stomach disorders, and diseases of the central nervous system. In addition to the obviously physical disabilities, emotional disabilities, particularly the neuroses, often constitute a felt handicap for heavy work such as moderate or great lifting. This vocational handicap for lifting and other heavy work is one of the important symptoms of neurosis and unless psychotherapy can be undertaken, must often be accepted as a permanent handicap from the standpoint of vocational guidance. The distinction between physical and emotional disabilities affecting ability to lift becomes highly tenuous for such diagnoses as arthritis when organic changes may not be seen, but is a distinction that must often be made for purposes of treatment and prognosis.

There are several ways to ascertain the true amount of handicap for lifting, all of which are used in the general counseling situation. The obvious starting point is to ask the handicapped person to describe the nature and course of his disability, and his report may be the only medical history available. Any other records available should, of course, be checked and the individual's report also should be evaluated for internal consistency.

At this point, the distinction must be made as to whether the disability and records permit the counselor to make a valid judgment of the nature and degree of handicap. For example: the individual's report and a fairly recent physical check-up may be sufficient evidence for the counselor to rate the amount of lifting handicap from pulmonary tuberculosis, limb amputation or heart disease. Such disorders as arthritis of the limbs and back, muscular atrophy, and psychoneurosis, however, will often require the development of an extensive case history by especially trained personnel. Evaluating the physical handicap for the latter disorders becomes a problem of coordinating the individual's report, the medical history, the present medical status, and social service and psychological reports.

Physical and Emotional Conditions Contra-indicating Lifting

Heart disease is one of the most common disorders contra-indicating lifting. While the cardiac condition may often seem mild and arrested, the physician's prognosis should be carefully noted since deterioration will often take place and must be anticipated in the consideration of vocational goals. The classification of heart disease made by the American Heart Association is one of the most useful guides to the counselor as to the amount of lifting the individual should do. The classes of cardiac disability range from I to IV with the first class requiring no limitation of physical activity and the last class embracing those persons who are unable to carry on any physical activity without discomfort. Classes II to IV should not do moderate or great lifting, and even little lifting probably should be avoided by Class III and IV patients. Regular follow-up examinations should be made to determine the course of the disability.

The National Tuberculosis Association has adopted criteria for determining the arrest of pulmonary tuberculosis which include the requirement that the negative findings exist for six months, during the last two of which the patient shall have taken exercise. While certain part-time or sheltered placements may be appropriate before this determination, full and unqualified placement should in most cases await the determination of "arrest." When this condition has been achieved, little or moderate lifting may usually be carried on. Ex-tuberculosis patients may be somewhat over-protective of themselves and the physician's report of the amount of lifting that can be done is to be preferred to the individual's report.

Orthopedic conditions probably constitute the largest group of the physical disabilities handicapping individuals for lifting. Qualified by the individual's prosthetic appliance and emotional adjustment, amputation cases may have full lifting capacity. Difficulty in balancing may be the only problem. Evaluation of lifting capacity for persons suffering from arthritis is very difficult. The diagnosis of arthritis may be made although the physician sees no organic pathology. In such cases, the individual's report must be depended upon and the determination of the amount of lifting he can do must often be determined in the same manner as for diagnosed neurotics. Where the symptoms are grossly observable, and appear only periodically, the most common nature and frequency of the attacks must be accommodated for in the job placement. Little lifting can usually be done, moderate lifting may be advisable depending on the individual's interest in the job, while great lifting can seldom be considered. Spinal defects and the residuals of injury to limbs or back can be evaluated in the two ways suggested above for amputation cases and arthritis.

Psychoneurotics constitute a very large group seldom considered in the evaluation of persons with handicaps for lifting. However, the vocational counselor working with the handicapped is constantly interviewing individuals who state that they cannot do heavy work. This attitude may be an over-protective one resulting originally from a real physical handicap; it may stem from exaggeration of a present physical condition; or it may have no observable organic basis whatsoever. Although these individuals may state they are incapable of moderate or great lifting, if the compensations of a particular job are to them greater than the heavy work involved, they may adjust themselves successfully to it. The desirability of dealing in these cases with the basic emotional problems should not be overlooked in making the vocational placement. Neither should the possibility of an undiagnosed physical disability be overlooked if a complete and recent physical examination is not available.

Jobs Requiring Moderate or Great Lifting

Any listing of jobs indicated or contra-indicated by a disability should take into account the fact that individuals with almost any disability can be found doing almost any job. This wide variability in placement of the disabled is accounted for by individual difference in adjustment to handicap, by the great range in jobs having the same title but different duties, and by the adaptation made by the particular employer or shop to the individual's handicap. In the Federal Civil Service, for example, individuals with an arm amputated are holding the following jobs which ordinarily involve lifting: shop electrician, chief mechanic, grease monkey, and laundry man. Individuals with a leg amputated are working as shop electrician, auto mechanic, blacksmith, and shipping clerk. Such jobs as plumber, storekeeper, and stockman, have been filled by persons with organic heart disease.

The list of specific occupations contra-indicated by the lifting handicap is too long to be given in a brief article. A general description can best be couched in terms of the Dictionary of Occupational Titles' major and three-digit groups: The "Professional and Managerial Occupations" require moderate or great lifting too seldom to warrant mention. "Clerical and Sales Occupations" require it more often. Of the 36 three-digit groups listed for the "Clerical and Kindred Occupations" seven might generally require extensive lifting. These include post office clerks, express messengers, rural mail clerks, shipping and receiving clerks, stock clerks, baggagemen, and weighers. Of the jobs in the "Sales and Kindred Occupations" only a few in exceptional circumstances would involve any sustained amount of heavy lifting.

In the "Service Occupations," the day workers, laundresses, yardmen, charwomen, janitors, and porters, out of the 42 groups listed might often be called upon for moderate or great lifting. Of the 43 three-digit groups listed under the "Agricultural, Fishery, Forestry, and Kindred Occupations" all might involve a substantial amount of lifting.

There are too many jobs listed under the "Skilled," "Semi-skilled" and "Unskilled Occupations" to make possible any but the broadest generalizations concerning lifting in the various jobs represented. Moderate or heavy lifting is generally required by the jobs in inverse relation to the amount of skill involved. Lifting is largely an unskilled operation and the more it is required by the job, generally the less the job involves skilled or semi-skilled operations.

The skilled workman generally will have relatively little lifting to do. If the job does require it, he may have a helper or an apprentice who will perform or assist in the performance of strenuous tasks. The learner in the field will often be called upon to do lifting during his apprenticeship even though little may be required after he achieves the skilled level.

That large part of the semi-skilled job field composed of machine operators is an exception to the general principle that lifting demands increase as requirements of skill decrease; and constitutes a special group where little lifting is usually required. At the unskilled level, most jobs consist largely of such heavy tasks as moderate or great lifting.

Specific reports on job demands should always be consulted when they are available. The United States Employment Service's general job descriptions at the national level, and job analyses at the local level at individual plants provide accurate information about the lifting requirements of particular jobs that will enable the vocational counselor to make adequate job placements from the standpoint of physical requirements, after a careful evaluation of the individual's handicap has been made. Other job demand analyses may also be available at the local level such as those made by Dunwoody Institute.

Summary

In the vocational placement of persons physically handicapped for lifting, the counselor is called upon to make several determinations. First, an understanding must be reached about what constitutes a substantial lifting load. Next, the individual's handicap must be evaluated in terms of general classes of lifting load. The gross physical pathologies must be recognized and described, and the rôle of the individual's emotional adjustment as it relates to the physical disability or as it gives rise to certain apparent physical handicaps must be carefully evaluated. In the attempt to measure the individual and the job, the positive aspects of the individual's vocational abilities are to be emphasized. No list of jobs which the individual with a handicap for lifting can or cannot do can be adequate. Variation in the individual's motivations, in the requirements of jobs with the same titles, and in adaptations made by the employer and by the handicapped individual, lead to placement of individuals with almost any handicap in almost any job. However, certain generalizations can be and have been made about the more desirable and less desirable jobs for individuals with the handicap for lifting.

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